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Increasing Emotion Regulation Skills for the Reduction of Heavy Drinking

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Increasing Emotion Regulation Skills for the Reduction of Heavy Drinking

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For my sister, Sarah M. Brister

(1977 – 2008)

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Increasing Emotion Regulation Skills for the Reduction of Heavy Drinking

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Heavy drinking puts college students at risk for academic failure, alcohol use disorders, and even death. Although several interventions have proven moderately successful, overall rates of collegiate heavy drinking and consequences have significantly increased since 1998, as interventions may not adequately address underlying reasons for drinking. Research has consistently shown that college students who drink primarily to regulate emotions (i.e., internal drinking motives) are heavier drinkers, experience more consequences, and are likely to continue drinking heavily after college. Further, internal drinking motives are indicative of emotion dysregulation and associated personality traits. Dialectical Behavior Therapy (DBT) is empirically supported and includes a group-based component designed to teach concrete behavioral emotion regulation, mindfulness, and distress tolerance skills. DBT skills training alone has been shown to reduce substance abuse and binge eating and is a promising, but untested, strategy for reducing collegiate alcohol abuse. The aims of the current study were threefold: (a) examine the efficacy of a DBT-based emotion regulation skills training (ERST) as an intervention for college student drinking, (b) examine theoretically-informed mechanisms

of change (i.e., changes in mindfulness, emotion regulation, and distress tolerance), and (c) examine intervention moderators (i.e., gender, readiness to change, and internal drinking motives). After completing pre-test measures, college students reporting two or more heavy drinking episodes during the past month were randomly assigned to an ERST or assessment-only control (AO) condition. ERST participants completed a single 3-hour group session of ERST within 7 days of completing pre-intervention measures and all participants completed two additional assessments. The current study found that ERST participants showed significantly greater reductions in heavy drinking and alcohol-related consequences relative to AO control participants. Contrary to hypotheses, intervention participation did not increase hypothesized mechanisms of change (i.e., mindfulness, emotion regulation, or distress tolerance) although emotion regulation and distress tolerance moderated intervention efficacy. Finally, ERST participation appeared to serve as a protective factor against heavy drinking and consequences for internally motivated drinkers. Overall findings provide preliminary support for the feasibility of ERST as a new intervention for reducing problematic drinking by college students and suggest future directions for mechanisms of change and moderation hypotheses.

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CHAPTER 1: OVERVIEW

For over a decade, curbing student alcohol consumption has been the focus of considerable and concerted efforts from legislators, funding organizations, alcohol researchers, and community and campus leaders. Heavy drinking, however, currently represents an even greater threat to college student health than it did over a decade ago (Hingson, Zha, & Weitzman, 2009; National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2007; Johnston, O'Malley, Bachman, & Schulenberg, 2007; Wecshler & Nelson, 2008). Finding efficacious individual-level interventions to reduce hazardous drinking among college students remains a crucial goal that may be accomplished by targeting the specific functions that alcohol serves.

Examination of reasons why college students drink reveals that approximately 40% of college students drink to modulate either positive (i.e., enhancement motives) or negative (i.e., coping motives) emotional responses (Goldstein & Flett, 2009; Goldstein, Wall, McKee, & Hinson, 2004). Students who drink primarily to manage their emotions have consistently been identified as the most problematic drinkers. Taken together these findings suggest that emotional dysregulation (as indicative of stronger internal drinking motives) is an important determinant of problematic drinking among college students.

Available college student drinking interventions, however, do not address emotion dysregulation. Teaching effective emotion regulation skills may prove a useful

intervention for reducing heavy drinking and alcohol-related consequences among college students. To date, no studies using randomized clinical trial methodology have examined increasing emotion regulation skills as an individual-level college student intervention. To address this limitation, the current study developed a brief emotion regulation skills training (ERST) intervention using previous research findings and components of Dialectical Behavior Therapy (DBT) and investigated its efficacy as a brief intervention for college student drinking.

In line with NIAAA's guidelines for college student drinking intervention investigations, the current study also investigated specific effects (i.e., mechanisms of change) and moderators of ERST efficacy. Given the preliminary nature of the current study, the exploratory MacArthur framework (Kraemer, Wilson, Fairburn, & Agras, 2002) was used to identify potential mediators and moderators. Emotion regulation represents a complex process (Gratz & Roemer, 2004; Larsen, 2000) which involves abilities closely related to specific skills that were taught during the ERST intervention. The theory underlying DBT skills training clearly articulates the roles of mindfulness, distress tolerance, and use of adaptive emotion regulation skills in an individual's emotion regulation capacities (Lindenboim et al., 2007; Linehan, 1993a; Miller et al., 2000; Schultz Fischer, 2007). Each skill area represents theoretically plausible mechanisms of change (Kazdin, 2007) through which DBT skills training may produce reductions in heavy drinking and alcohol-related consequences among college students. Finally, the current study examined empirically or conceptually important moderators of intervention efficacy. Overall, the current study helped clarify the role of emotion

dysregulation in problematic drinking and addressed a crucial need by identifying a new and potentially efficacious intervention to reduce college student drinking and associated consequences.

CHAPTER 2: BACKGROUND AND INTRODUCTION

From fraternity parties to final examination week, alcohol has played a central role in the typical college experience for decades. Not surprisingly, college students drink more alcohol than any other demographic group (Johnston, O'Malley, & Bachman, 1999). Notable exceptions aside (e.g., Bachman & Johnston, 1979; Blane & Hewitt, 1977; Johnston, O'Malley, & Bachman, 1994; Strauss & Bacon, 1953), empirical data on college student drinking and efficacious interventions were virtually non-existent prior to 1980 (O'Malley & Johnston, 2002). Although the National Institute on Alcohol Abuse and Alcoholism (NIAAA) began presenting summarized research findings to Congress in 1971 (U.S. Department of Health and Human Services [USDHHS], June, 2000), it was not until the late 1990s that researchers began to fully investigate the expansive scope of problematic collegiate drinking (O'Malley & Johnston, 2002). Consequently, the following sections offer a brief chronological review of the empirical findings and advances in intervention research for college drinking over the past decade.

According to results from five large-scale epidemiological studies examining the drinking behaviors of tens of thousands of students at hundreds of American colleges and universities (e.g., College Alcohol Study, Monitoring the Future, National College Health Behavior Survey), approximately 70% of college students drank alcohol in the past 30 days (O'Malley & Johnston, 2002). Composite results indicate that approximately 40% of the college students binge drank (i.e., consumed four or more drinks per setting for women and five or more for men) at least once during the previous two weeks (see Figure 1 of O'Malley & Johnston, 2002, for complete

data). Even more disturbing, 23% of students binge drank at least three times during the past two weeks (i.e., frequent binge drinkers; Wecshler, Lee, Kuo, & Lee, 2000).

Not surprisingly, between 6 and 31% of college students met *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994) criteria for alcohol abuse or dependence (Grekin & Sher, 2006; Slutske, 2005; Knight, et al., 2002) during the past year. Alarmingly, almost 12% of incoming freshmen met *DSM-IV* criteria for alcohol dependence during both their first semester and second semesters of college (Grekin & Sher, 2006). In addition, it appears that problematic drinking patterns emerge prior to or soon after starting college (Grekin & Sher, 2006) and continue to escalate dangerously throughout the college years for many students (Schulenberg, O'Malley, Bachman, Wadsworth, & Johnston, 1996). While the majority of college students moderate their drinking as they grow older (Donovan, Jessor, & Jessor, 1983; Jochman & Fromme, 2009), almost one third of college students are at risk for developing a diagnosable alcohol use disorder (Jackson, Sher, Gotham, & Wood, 2001) or failing to transition successfully to adult roles (e.g., marriage, job stability; Bennette, McCrady, Johnson, & Pandina, 1999).

Unfortunately, alcohol use disorders are not the only risk for college students who drink heavily. College drinking has also been associated with increased risky sexual activity, alcohol-related injuries, legal problems, and academic difficulties (Cooper, 2002; Hingson, Heeren, Zakocs, & Kopstein, 2002; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). According to longitudinal morbidity and mortality findings, a staggering 2.5 million college students drove after drinking. In addition, alcohol contributed to at least 500,000 unintentional,

non-traffic-related injuries (e.g., drowning, falls) among college students in 1998 alone (Hingson et al., 2002). Tragically, alcohol-related injuries claimed the lives of 1,442 college students in 1998, 78% of which were traffic fatalities.

Equally alarmingly, moderate drinkers are not immune to alcohol-related consequences. Typically, lighter drinking students account for the majority of alcohol-related consequences, including injury and death (NIAAA, 2002, p. 47; Weitzman & Nelson, 2004) and may be especially vulnerable to experiencing problems during single episodes of heavy drinking (Neal & Carey, 2007; Neal & Fromme, 2007). Clearly, the problematic consequences of heavy college drinking unambiguously represent a serious public health concern that cannot be ignored, as more than 80% of college students drink at least occasionally (O'Malley & Johnston, 2002; Wechsler et al., 2000).

ADDRESSING THE PROBLEM OF COLLEGE ALCOHOL USE: INTERVENTIONS

Although problematic drinking has plagued young adults for decades, it was not until the late 1990s that the dangers of heavy collegiate drinking began to attract national attention (House of Representatives Bill 321, 1997; Senate Bill 192, 1998; National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2000). In 2002, NIAAA created a collaborative Task Force on College Drinking to identify (a) efficacious individual-level interventions for college student drinking, (b) active intervention components (i.e., effective intra-intervention specific strategies), and (c) factors that moderate intervention efficacy. The task force was created so that campus administrators could choose and implement effective interventions based on the best possible scientific guidance (NIAAA, 2002).

To fulfill these goals, the task force commissioned two comprehensive literature reviews of individual-level interventions conducted between the years of 1984 and 2006 (Larimer & Cronce, 2002, 2007). The task force's evaluation criteria mirrored the American Psychological Association's (APA) guidelines for evaluating empirically supported treatments (ESTs; Chambless & Hollon, 1998; Chambless, Sanderson, Shoham, Bennett Johnson, Pope, Crits-Christoph, et al., 1996). In short, the APA has noted that a psychological treatment or intervention can be designated as empirically supported if it: a) successfully reduces clearly defined symptoms or problem behaviors, b) identifies for whom and under what conditions interventions are most effective and, c) identifies specific mechanisms through which interventions enact behavior change (i.e., efficacious and specific; Chambless & Hollon, 1998).

As randomized clinical trial (RCT) methodology is arguably the "gold standard" for evaluating a psychological treatment or intervention (Chambless & Ollendick, 2003; Haaga & Stiles, 2000), Larimer and Cronce's literature reviews (2002, 2007) excluded over 1000 intervention studies that did not use random assignment. The original and subsequent reviews included 74 studies and used theoretical underpinnings to broadly classify interventions as: 1) educational- or awareness-based, 2) cognitive or behavioral skills-based CBT-based), or 3) motivational- or feedback-based (MI/PNF-based; Larimer & Cronce, 2002, 2007). Findings from both reviews indicated that while educational- or awareness-based interventions were ineffective, brief CBT- and MI/PNF-based interventions were moderately efficacious for reducing heavy drinking and alcohol-related consequences. Specifically, students who participated in any active intervention (i.e., CBT-based or MI/PNF-based) showed greater

reductions in typical drinking (*d* quantity = 0.19; *d* frequency = 0.17) and peak BAC (*d* = .41) relative to control condition participants (Carey, Scott-Shelton, Carey, & DeMartini, 2007). Moreover, findings indicate that the overall quality of intervention research has drastically improved as the use of RCT methodology and the systematic examination of intervention mediators and moderators have substantially increased since 2002 (Larimer & Cronce, 2007; NIAAA, 2007).

Despite notable and encouraging advances in intervention research (Larimer & Cronce, 2007; NIAAA, 2007), college student drinking and severe alcohol-related consequences appear to have increased since the task force's original reports highlighting the pervasive scope of the problem were released in 2002 (Hingson, Zha, & Weitzman, 2009; Wecshler & Nelson, 2008). Based on the most current available data, past month rates of both college student binge drinking [+ 7%] and driving under the influence [+ 9%] significantly increased between 1999 and 2005 (Hingson et al., 2009). Chillingly, there were 1825 alcohol-related deaths among college students, 74% of which were traffic fatalities in 2005, representing a 3% proportional increase since 1998 (Hingson et al., 2009).[1]

Although there are many possible explanations for the disappointing findings of the past decade, it may be that current interventions are only moderately efficacious because they inadequately address the underlying reasons that motivate problematic collegiate drinking.

[1] Proportional incidence rate changes are presented as the estimated number of college students increased from 7.5 million in 1998 to 9.5 million in 2005 (Hingson et al., 2009).

Researchers have argued that determining and targeting theoretically based mechanisms of change may dramatically improve intervention efficacy (Carey et al., 2007; Kazdin, 2007; Westen, Novotny, & Thompson-Brenner, 2004; US Department of Health and Human Services, 2007).

Reasons for Drinking

Understanding why people drink despite the adverse consequences (Jellinek, 1945; Riley, Marden, & Lifshitz, 1948) has been a central focus of research for decades. Although various biological (e.g., gender, sensitivity to alcohol's pharmacological effects, personality), cognitive (e.g., inflated normative drinking estimates), and environmental (e.g., residence, peer group) factors shape how each individual views the incentives and costs of alcohol use, the ultimate decision to drink is voluntary. Thus, if the perceived benefits of drinking outweigh the consequences, then it follows that an individual will be motivated to drink. Based on these principles, Cox and Klinger (1988) devised a widely influential motivational model of alcohol use positing that people drink to influence their emotions in response to either internal (e.g., physiological, emotional distress) or external (e.g., social, situational) cues.

Further expanding on Cox and Klinger's (1988) model, Cooper (1994) classified reasons for drinking into four categories: 1) positively reinforcing and internally driven (i.e., enhancement motives: positive mood state enhancement or physiological enjoyment), 2) positively reinforcing and externally driven (i.e., social motives: celebrating with friends), 3) negatively reinforcing and internally driven (i.e., coping motives: alleviating negative mood states), and 4) negatively reinforcing and externally driven (i.e., conformity motives: social

rejection avoidance). Although college students endorse all four drinking motives, a large body of research has consistently shown that students who drink for enhancement reasons are heavier drinkers, and those who drink for coping reasons experience more alcohol-related consequences relative to students whose drinking is externally motivated (i.e., social, conformity motives; Cooper et al., 1995; Martens et al., 2008; Stewart & Chambers, 2000; Weinberger & Bartholomew, 1996). In particular, socially motivated drinking has been associated with the lightest and least problematic drinking (Cooper, 1994; Cooper, Russell, Skinner, & Windle, 1992; Kuntsche et al., 2005), and drinking for conformity appears to be only weakly associated with problematic drinking behaviors (Kuntsche et al., 2008; Martens et al., 2008; O'Connor & Colder, 2005).

Internal Drinking Motives and Personality

Cox and Klinger (1988) also posited that drinking motives represent the final pathway through which all other variables, including personality, influence drinking behavior. As enhancement and coping motives are internally driven, they may be more stable relative to personality, whereas social and conformity motives are externally driven and thus likely to change with situational and social factors. Converging evidence has demonstrated that social and conformity motives are either weakly associated or unrelated to personality variables after controlling for internal motives (Loukas, Krull, Chassin, & Carle, 2000; Stewart & Devine, 2000; Theakston, Stewart, Dawson, Knowlden-Loewen, & Lehman, 2004). Overall findings have led scientists to conclude that personality traits influence drinking only through internal drinking motives (Cooper, 1994; Cooper et al., 1995).

In addition, internal drinking motives have been consistently associated with personality characteristics associated with problematic drinking (Cooper et al., 1995; Kuntsche, Knibbe, Gmel, & Engels, 2006; Read et al., 2003; Stewart & Devine, 2000). Specifically, college students who typically drink for enhancement motives tend to engage in impulsive behaviors without considering potential consequences (Cooper, Agocha, & Sheldon, 2000; Stewart & Devine, 2000; Theakston et al., 2004). Students who typically drink for coping motives can be characterized by emotional lability (Goldstein & Flett, 2009; Simons, Gaher, Correia, Hansen, & Christopher, 2005), alexithymia (i.e., inability to name emotions; Theakston et al., 2004), and high negative affectivity (Cooper et al., 1995; Read et al., 2003).

Finally, both coping and enhancement drinking motives have been significantly predicted by trait-level experiential avoidance (Stewart, Zvolensky, & Eiffert, 2002). Experiential avoidance is defined by overly negative evaluations of unwanted thoughts, sensations, and emotions as well as excessive avoidance behaviors resulting from unwillingness or inability to tolerate emotional distress (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Kashdan, Barrios, Forsyth, & Steger, 2006). The findings of Stewart et al. (2002) are consistent with conclusions that experiential avoidance indicates difficulties tolerating the presence of negative emotions as well as the lack of positive emotions (Hayes et al., 1996). As a result, students with stronger internal drinking motives may use alcohol to decrease or induce affective states (e.g., relaxation when anxious, excitement when bored). Consequently, internal drinking motives represent a trait-based tendency to drink in order to manage uncomfortable emotions and reflect

trait-based motivation to drink for emotion regulation (Cooper, Frone, Russell, & Mudar, 1995; Goldstein & Flett, 2009; Labouvie & Bates, 2002; Wilke & Stewart, 2005).

EMOTION REGULATION AND ALCOHOL USE

Given that emotions guide behaviors, the ability to moderate (i.e., increase or decrease; Gross, 2007, pp. 3-24; Melnick & Hinshaw, 2000) or tolerate emotional experiences is essential for inhibiting inappropriate or impulsive behaviors so that goal-directed behaviors can continue during times of extreme negative and positive affective states or when aversive situations cannot be changed (Cole, Michel, & Teti, 1994; Linehan, 1993a, pp. 143-155; Thompson, 1994). Although many definitions have been proposed (Larsen & Prizmic, 2004, pp. 40-57), emotion regulation is generally defined as the flexible ability to either modulate the intensity or duration of emotional states or to non-judgmentally accept difficult emotions (Hayes, Strosahl, & Wilson, 1999; Thompson & Calkins, 1996). Gratz and Roemer (2004) further operationalized emotion regulation as a multi-faceted process that requires the ability to recognize, understand, monitor, and adaptively choose emotion regulation strategies that are in line with an individual's situational demands (e.g., choosing to get adequate rest before an exam instead of attending a party) or overarching goals (e.g., repeatedly choosing good study habits in order to graduate from college).

Although conceptual models underlying CBT-based (Social Learning Theory, Bandura, 1977) and MI/PNF-based (Transtheoretical Model of Behavior Change; Prochaska & DiClemente, 1984) college student drinking interventions acknowledge the critical role of emotion dysregulation in maintaining heavy drinking, they rarely or inadequately teach emotion

regulation. Specifically, CBT-based interventions presume that cognitive or behavioral deficits motivate problematic drinking, and these interventions accordingly teach behavioral skills to help students moderate their drinking. Such interventions, however, neglect to teach strategies other than relaxation for managing anxiety (e.g., Amaro et al., 2009; Marlatt et al., 1998).

Similarly, MI-PNF-based interventions attempt to non-confrontationally increase self-awareness that drinking may be problematic and/or facilitate exploration of ambivalence towards change (Miller & Rollnick, 2002; Prochaska & DiClemente, 1984). Presumably, the resulting ambivalence and concomitant discomfort are resolved through behavior change (Velasquez et al., 2001). Despite the critical focus on emotions, they are not directly addressed through these types of interventions. Furthermore, whereas MI/PNF-based interventions appear to be the best available intervention for college student drinking (Carey et al., 2007), subsequent analyses indicate they are most effective for students who primarily drink for externally-motivated social reasons (Carey, Carey, Maisto, & Henson, 2006; Carey, Henson, Carey, & Maisto, 2007; Neighbors, Larimer, & Lewis, 2004; Walters & Neighbors, 2005).

Thus, despite a large body of converging evidence demonstrating that internal drinking motives are endorsed by approximately 40% of college students (Goldstein & Flett, 2009) and indicative of emotion regulation skills deficits, emotion dysregulation is essentially ignored by existing interventions for college student drinking. Consequently, a student may desperately want to change his or her drinking behaviors, but, as Cox and Klinger (1988) noted:

> [If] a person's goal striving and the nonchemical incentives produced by that striving do not provide emotional satisfaction that competes successfully with the emotional

> satisfaction attainable by drinking alcohol…, the person's positive goals—even if appropriate, realistic, and sufficient in number—may conflict with one another, making goal attainment unlikely or impossible (p. 178).

Simply put, if drinking is a student's only or most powerful way of coping with their emotions, then behavioral changes prescribed by current interventions are likely to fail.

EMOTION DYSREGULATION AS A NEW INTERVENTION TARGET

These findings strongly suggest that emotion dysregulation may be a useful intervention target for reducing heavy drinking among college students. Dialectical Behavioral Therapy (DBT) is an empirically supported treatment for borderline personality disorder (BPD), primarily characterized by pervasive patterns of emotion dysregulation and frequent engagement in potentially self-destructive impulsive behaviors. The efficacy of DBT for treating borderline personality disorder has been well established (Koerner & Dimeff, 2007, p. 1-18; Lynch et al., 2007a), and DBT has been extended to and shown to successfully reduce binge eating (Palmer et al., 2003), depression (Lynch et al., 2007a; Lynch, et al., 2007b), and substance dependence (Linehan et al., 1999, 2002; McMain, Sayrs, Dimeff, & Linehan, 2007, pp. 148-149) among individuals with comorbid diagnoses of borderline or antisocial personality disorders. As personality disorders are notoriously difficult to treat, DBT typically involves weekly individual therapy, group-based skills training, and phone coaching sessions with the overall goal of helping individuals learn to recognize, accept, and tolerate uncomfortable emotional states and to adaptively regulate their moods. The DBT group-based skills training component teaches concrete skills designed to reduce unsafe, impulsive behaviors, including self-mutilation,

extreme emotional outbursts, substance abuse, and risky sexual activity, which, according to the DBT framework, represent maladaptive attempts to regulate affective states (Chapman & Linehan, 2005; Linehan, 1993a, pp. 121-164).

Consistent with the guiding dialectical perspective of DBT, skills training sessions are divided into four modules. Specifically, two modules teaching specific change skills and two modules dedicated to teaching the concrete skills needed for acceptance of the present moment (Linehan, 1993a, pp. 97-164). According to Linehan (1993b, pp. 8-17), the order of module presentation is unimportant, but Core Mindfulness skills (CMS) are usually taught first as they facilitate the use of all other DBT skills (Koehler, June, 2009). Similar to Gratz and Roemer's (2004) conceptualization of emotion regulation, mindfulness skills are presented as essential for choosing the most effective strategy based on situational demands and are emphasized within the remaining modules. Skills taught during the Mindfulness module are intended to help individuals non-judgmentally observe, describe, and fully focus their attention on current situational, bodily, and emotional experiences without attempting to change them (Kabat-Zinn, 1990; Linehan, 1993a, pp. 329-370). Additional skills help individuals refocus their attention when distracted and wholly engage in the present moment while using both logic and emotional intuition to act effectively (i.e., doing what works instead of what feels right or fair; Linehan, 1993a; Lynch, Trost, Salsman, & Linehan, 2007a).

Skills taught during the Distress Tolerance module are intended to help individuals tolerate painful emotions when current affective states or external stressors cannot be changed. According to the underlying theory of DBT, poor distress tolerance is best conceptualized as

high experiential avoidance, and the inability to tolerate painful or difficult experiences increases risk for impulsive avoidance behaviors (Hayes et al., 1996; Linehan, 1993a, pp. 144-152; Stewart et al., 2002). The Distress Tolerance module also includes specific adaptive distraction skills such as self-soothing, purposefully inducing intense sensations (e.g., listening to loud music, squeezing an ice cube), and half smiling techniques.

Specific change skills taught during the Emotion Regulation module are intended to help individuals recognize, describe, and adaptively change their emotions. Additional skills include reducing emotional vulnerability through self-care (e.g., exercise, adequate sleep), taking opposite action (e.g., engaging in calming activities during times of anxiety), and increasing positive emotional events. The second change-based training module is Interpersonal Effectiveness Skills (IPES) which are designed to teach assertiveness and interpersonal communication skills.

Efficacy of Dialectical Behavior Therapy Skills Training as a Stand Alone Intervention

Despite strong theoretical support indicating that DBT may be a useful treatment for problematic behaviors conceptualized as maladaptive emotion regulation strategies (e.g., eating disorders, substance use disorders), applying the entire DBT package to treat Axis I disorders, uncomplicated by comorbid Axis II pathology, would be impractical and overreaching. Fortunately, DBT represents a flexible treatment (Linehan, 1993a, p. 250), and researchers have acknowledged that theory-driven simplifications could be efficacious (Koerner, Dimeff, & Swenson, 2007, pp. 19-35).

For example, two studies randomly assigned women diagnosed with binge eating disorders to wait-list control or to receive 20 sessions of either individual (Safer, Telch, & Agras, 2001) or group (Telch, Agras, & Linehan, 2001) DBT skills training. Using skills from the Mindfulness, Distress Tolerance, and Emotion Regulation modules significantly reduced overall binge eating episodes, suggesting that abbreviated DBT skills training may be a potentially efficacious treatment for binge eating disorders (Safer et al., 2001; Telch et al., 2001).

Although there are no published studies supporting the efficacy of DBT for substance use disorders (SUD) without comorbid personality disorders, a recent study indicated that a course of 12 individual sessions of DBT skills training, using skills from the Mindfulness, Emotion Regulation, and Distress Tolerance modules, was moderately effective for reducing methamphetamine use and emotional distress (Schultz-Fischer, 2007). Despite the small sample size (N = 9) and use of case study design, this study has provided cautiously optimistic support for the use of abbreviated DBT skills training as an intervention for reducing substance abuse. These findings suggest that teaching individuals concrete emotion-regulation strategies may yield adaptive alternatives for managing unwanted emotional states without engaging in harmful substitute behaviors (e.g., binge eating, substance abuse).

Modifying DBT Skills Training to Address Heavy College Student Drinking

Despite strong theoretical support and cautious empirical support for the potential efficacy of abbreviated DBT skills training for reducing heavy drinking and related consequences, 12 (Schultz-Fisher, 2007) to 20 (Telch et al, 2001) sessions of DBT skills training would be impractical and potentially overreaching for a college sample, as the vast majority of

college students drink heavily, but do not represent a clinical sample. In addition, brief interventions have been shown to be at least moderately effective for reducing drinking and alcohol-related consequences for heavy drinkers (Carey, Scott-Sheldon, et al., 2007; Fromme & Corbin, 2004; Labrie, Lamb, Pedersen, & Quinlan, 2006), and condensed single session interventions appear to be equivalent to longer versions in terms of intervention efficacy when delivered individually (Baer et al., 1992) or in group formats (D'Amico & Fromme, 2000). In line with the NIAAA task force's continued emphasis on cost-efficient brief interventions (DeJong et al., 2009), further modifications were made to abbreviate DBT skills training into an Emotion Regulation Skills Training (ERST) intervention to reduce heavy collegiate drinking and associated consequences.

Congruent with the overall conceptualization that problematic behaviors such as substance abuse or binge eating represent maladaptive attempts to regulate internal emotional states, previous studies using abbreviated DBT skills training omitted the Interpersonal Effectiveness skills module (i.e., Safer et al., 2001; Schultz Fischer, 2007; Telch et al., 2001). Core Mindfulness, Distress Tolerance, and Emotion Regulation skills potentially reduce impulsive behaviors such as alcohol use by facilitating the use of non-judgmental acceptance or adaptive change during times of external stress or unwanted affective states (Lindenboim, Comtois, & Linehan, 2007; Lynch, Chapman, Rosenthal, Kuo, & Linehan, 2006; Miller, Wyman, Huppert, Glassman, & Rathus, 2000). Together, these skills may help college students reduce heavy drinking in a similar manner to exposure and response prevention strategies for anxiety disorders (Barlow, Allen & Choate, 2004). That is to say, applying DBT skills may help

students fully experience their emotional and situational states without using alcohol to escape or avoid uncomfortable experiences.

Specifically, teaching mindfulness may help students reduce their alcohol use by facilitating disengagement from current situational and emotional states, thereby allowing informed behavioral decisions (Ryan & Deci, 2000; Segal, Williams, & Teasdale, 2002). Increasing distress tolerance skills may help students experience the full range of their emotional states (e.g., presence of negative affect and/or lack of positive affect) and endure uncomfortable situations without attempting to change them through alcohol use. Applying skills from the Emotion Regulation module may help students non-judgmentally recognize, experience, and accept their affective states, thereby decreasing drinking to avoid or suppress uncomfortable emotional states. Further, using Emotion Regulation skills may help students adaptively change their emotional states, without alcohol, and continue with goal-directed behaviors during times of strong affect (Lindenboim et al., 2007). These findings suggest that a single group-based session of DBT skills training intervention focusing on Core Mindfulness, Distress Tolerance, and Emotion Regulation skills training modules may successfully reduce heavy drinking and associated consequences among college students.

CHAPTER 3: CURRENT STUDY AND HYPOTHESES

The primary aim of the current study was to evaluate the efficacy of Emotion Regulation Skills Training (ERST) relative to assessment-only control (AO) as successfully demonstrating better intervention outcomes relative to AO would establish ERST as a "possibly efficacious, pending replication" intervention according to the APA's guidelines for evaluating interventions (Chambless & Hollon, 1998). In addition, understanding specific mechanisms of change (i.e., how interventions enact behavioral change) is considered by many researchers as an important step in improving interventions (Kazdin, 2007). The second aim of the current study was to examine changes in constructs targeted during the intervention as potential mechanisms of change for ERST participants. Finally, identifying for whom and under what conditions interventions are most effective is also important for evaluating intervention efficacy. The third aim of the current study was to examine moderating effects of ERST efficacy. Intervention moderators were determined based on previous literature. The following specific hypotheses were made:

1) ERST will lead to greater post-intervention reductions in heavy drinking and alcohol-related consequences relative to AO.

2) Relative to AO, ERST will show greater increases in the following:

2a) mindfulness

2b) distress tolerance

2c) emotion regulation

3) Reductions in heavy drinking and alcohol-related consequences will be mediated by changes in mindfulness, distress tolerance, and emotion regulation skills, thereby supporting these variables as mechanisms of change for ERST.

4) Internal drinking motives conceptually represent maladaptive attempts to regulate emotions and individuals who drink primarily to regulate their emotions are most likely to benefit from emotion regulation skills training (McMain, Sayrs, Dimeff, & Linehan, 2007, pp. 145-173). Therefore it is hypothesized that:

4a) internal drinking motives will moderate intervention efficacy, such that pre-intervention internal drinking motives will lead to greater post-intervention reductions in problematic drinking among ERST participants.

4b) Conversely, it is also hypothesized ERST may be ineffective for individuals whose emotions contribute little, if any, to sustained use of alcohol (e.g., individuals whose drinking is primarily externally-motivated).

5) A recent meta-analysis suggests that women generally respond better to college drinking interventions than men (Carey, Scott-Sheldon, et al., 2007). Therefore it is hypothesized that gender will moderate intervention efficacy, such that women will report larger post-intervention reductions in heavy drinking and alcohol-related consequences relative to men.

6) Previous studies have shown that readiness to change (RTC) is typically unaffected by intervention participation. It is hypothesized however, that readiness to change will moderate intervention efficacy, such that higher pre-intervention readiness to change will lead to greater post-intervention reductions in heavy drinking and alcohol-related consequences in the ERST condition.

7) Lower life satisfaction has been associated with higher experiential avoidance (Hayes et al., 2004) which has been associated with heavier drinking (Chawala & Ostafin, 2007; Stewart et al., 2002). Therefore it is hypothesized that life satisfaction will moderate intervention efficacy, such that lower life satisfaction will lead to smaller reductions in post-intervention heavy drinking and alcohol-related consequences.

CHAPTER 4: RESEARCH DESIGN AND METHODS

PARTICIPANT RECRUITMENT

Undergraduates at The University of Texas at Austin were recruited for "The College Health and Emotions Study" through e-mail invitations sent to randomly selected subsets of introductory psychology students (N = 208) and fliers posted throughout campus. Eligible students: (a) were between 18 and 25 years old, (b) reported at least two past month binge drinking episodes (i.e., consumed at least five/four drinks for men/women per drinking occasion), and (c) did not meet criteria for an alcohol use disorder (i.e., a score of 15 or higher on the AUDIT; see measures). Interested students were asked to complete a brief, 2-5 minute pre-screening assessment to determine eligibility. Potential participants completed the screening via Survey Monkey, a secure online data collection site, or telephone. Recruitment continued until equal numbers of participants in both study conditions completed both pre- and post-test measures (see Procedures below).

PARTICIPANTS AND PROCEDURES

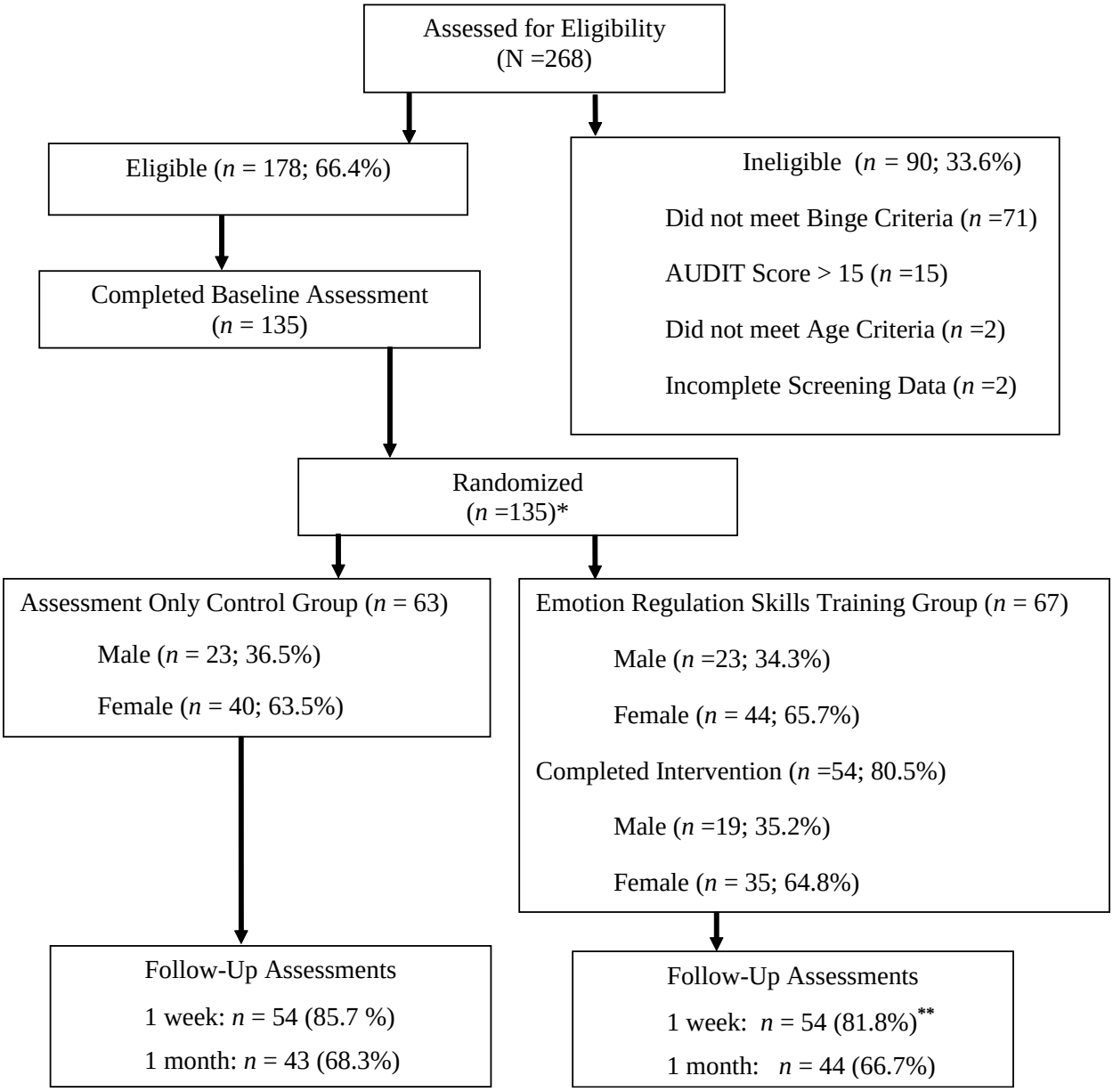
After providing electronic informed consent to complete web-based measures, eligible students (n = 178; 66.4%) were directed to an individualized, password-protected Survey Monkey website to complete the pre-test measures. Among eligible students, 135 (75.8%) who completed pre-test assessment, 7 (3.9%) reported AUDIT scores of 15 or higher during the pre-test (n = 5) or post-test (n = 2) assessments and were excluded from further study participation (see Appendix A: Participant Data Safety Monitoring Plan; DSMP).

After completing the pre-intervention assessment, participants were randomly assigned based on gender and past month binge drinking episodes to the Assessment Only Control (AO; *n* = 63) or Emotion Regulation Skills Training (ERST; *n* = 67) condition using the Project MATCH Urn Randomization Program (Stout. Wirtz, Carbonari, & Del Boca, 1994). ERST participants were scheduled to complete group sessions within 7 days of completing pre-intervention measures and provided additional written informed consent (*n* = 54; 80.5%) upon arrival to the laboratory. ERST participants completed post-intervention and 1-month follow-up assessments approximately 7 and 30 days, respectively, after the group session. Participants randomized to the AO condition completed the post-intervention and 1-month follow-up assessments 14 and 30 days, respectively, after completing the pre-intervention assessment. Participants received 1 hour of psychology course credit (students received between 2-5 hours in credit) or $5 per each hour (students received between $5-$25) of study participation depending on randomly assigned condition and were entered into a prize raffle to receive a Playstation 3 for completing the final brief 1-month follow-up assessment. All procedures were approved by the Institutional Review Board (IRB) at the University of Texas at Austin and a Certificate of Confidentiality was obtained from the U.S., Department of Health and Human Services to assure the confidentiality of all assessment data and audio-taped ERST session content.

The final sample consisted of 108 participants (*n* = 54 per condition) and was 65.7% female, 59% Caucasian, with a mean age of 19.68 (*SD* = 1.30) years. Although women and white students were overrepresented, the current sample was generally representative of the

undergraduate student population at the University of Texas at Austin. Figure 1 shows the flow of participants through the project.

Figure 1. Participant Flow



*Notes.** Five participants reported significant AUDIT score increases from pre-screen to baseline assessment and were excluded from further participation.
** Two participants reported significant AUDIT score/heavy drinking increases from the baseline to 1-week follow up survey and were excluded from further study participation.

MEASURES

Demographic information including age, gender, ethnicity, and past month binge drinking was collected during pre-screening. Outcome measures were collected during the pre- and post-intervention as well as 1-month follow-up assessments. Potential intervention mechanisms of change (i.e., mindfulness, emotion regulation, and distress tolerance) and non-demographic moderators (e.g., readiness to change, drinking motives, life satisfaction) were measured during the pre- and post-intervention assessments to reduce participant burden.

Alcohol Use Disorders. The 10-item Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, De La Fuente, & Grant, 1988) was used to screen for alcohol use disorder symptoms as part of the current study's data safety monitoring purposes (DSMP; see Appendix B). The AUDIT demonstrated adequate internal consistency (Cronbach's alphas ranged from .61 to .77) across four assessments in the current study.

Alcohol Use. Typical drinking frequency (i.e., average number of drinking days) and quantity (i.e., average number of drinks consumed per drinking day) was measured with the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1986). Single item questions (Jackson, Sher, Gotham, & Wood, 2001) assessed past week binge (e.g., consuming 5 or more standard drinks for men or 4 or more standard drinks for women) and drunken episodes. Standard drinks were defined as 12 ounces of beer, 1.5 ounces of liquor (straight or in a mixed drink), or 5 ounces of wine. As in previous studies (Agrawal et al., 2009; Fromme & Corbin, 2004), a single heavy drinking composite was created by summing past week drinking

frequency, quantity, binge, and drunken episodes. The composite score demonstrated adequate internal consistency (Cronbach's alpha = . 82) for the current study.

Alcohol-Related Consequences. The 23-item Rutgers Alcohol Problem Index (RAPI; White & LaBouvie, 1989) assessed past week number of alcohol-related consequences (e.g., failure to complete assignments, alcohol withdrawal) using a 0 ("Never") to 4 ("More than 10 times") point Likert scale. The RAPI has demonstrated adequate internal consistency (Cronbach's alpha = .92; White & Labouvie, 1989), with adequate internal reliability (Cronbach's alpha = . 82) for the current study.

Mindfulness. The 15-item Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) assessed mindfulness using a 1 ("Almost Always") to 6 ("Almost Never") point Likert scale. Items were summed such that higher scores reflected higher trait mindfulness (Brown & Ryan, 2003) and the MAAS demonstrated acceptable internal consistency (Cronbach's alpha = .92) for the current study.

Distress Tolerance. The 9-item Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004) assessed distress tolerance using a 1 ("Never True") to 7 ("Always True") point Likert scale. Consistent with previous studies (Hayes et al. 2004), avoidance items (n = 4; e.g., "if I could magically remove all painful experiences I've had in my life, I would do so") were reverse scored, and items summed such that higher scores reflected lower experiential avoidance. This approach is consistent with greater distress tolerance from the perspective of Dialectical Behavior Therapy. The AAQ has demonstrated adequate internal reliability (Cronbach's alpha =

.70) for a scale with less than 10 items (Nunnally, 1978, as cited in Hayes et al., 2004), Cronbach's alpha was .64 in the current study.

Emotion Regulation. The 30-item Negative Mood Regulation Scale (NMR; Catanzaro & Mearns, 1990) assessed emotion regulation using a 1 ("Strongly Disagree") to 5 ("Strongly Agree") point Likert scale. The NMR assesses perceived ability to regulate mood in general (e.g., "Wallowing in it is all I can do,"), and by use of behavioral (e.g., "I can feel better by treating myself to something I like") and cognitive (e.g., "I'll feel okay if I think about more pleasant times) strategies. Items were summed such that higher scores reflected greater emotion regulation skills. The NMR demonstrated adequate internal reliability (Cronbach's alphas = .89).

Drinking Motives. The 20-item Drinking Motives Measure-Revised (DMM-R; Cooper, 1994) evaluated frequency of drinking for internal (coping [i.e., decreasing negative affect] and enhancement [i.e., increasing positive affect]) and external (social [i.e., social facilitation] and conformity [e.g., to fit in with friends]) motives using a 1 ("Almost Never/Never") to 5 ("Almost Always/Always") point Likert scale. All four subscales demonstrated adequate internal consistency (Cronbach's alphas ranged from .77 to .90) in the current study.

Readiness to Change. A single item (Heather, Smailes, & Cassidy, 2008) assessed readiness to change drinking behaviors using a 0 ("Never Think about Drinking Less") to 4 ("My Drinking has Changed, I Now Drink Less than Before") point Likert scale.

Satisfaction with Life. The 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) assessed perceived life satisfaction using a 1 ("Strongly Disagree") to 7 ("Strongly Agree") point Likert scale. Items (e.g., "The conditions of my life are

excellent," "if I could live my life over, I would change almost nothing") were summed such that higher scores represented greater life satisfaction. The SWL demonstrated good internal consistency (Cronbach's alpha = .92) for the current study.

Use of Intervention Skills. A modified DBT skills training diary card, completed during the post-intervention assessment (ERST participants only), assessed past week frequency of skill use and helpfulness of each skill using a 1 ("Almost Never Used" or "Not Helpful") to 5 ("Almost Every Time I Drank" or "Extremely Helpful") point Likert scale. Mindfulness, Emotion Regulation, and Distress Tolerance skills use frequencies and perceived helpfulness were summed to create six separate composite measures. All composite measures demonstrated adequate internal consistency (Cronbach's alphas ranged from .84 to .95).

Student Evaluations of the Program. A Participant Program Satisfaction questionnaire, modified from the student evaluation questionnaire used in previous studies (Marlatt et al., 1998), measured ERST participants' ratings of 11 aspects of intervention usefulness and relevance (e.g., "The topics discussed during the program seem relevant to reasons why I drink alcohol") and facilitator characteristics (e.g., "The facilitators seemed well trained and competent to teach the program skills,") using a 1 ("Strongly Disagree") to 5 ("Strongly Agree") point Likert scale. Open-ended questions were used to assess participants' perceptions of most useful and least useful aspects of ERST participation.

DEVELOPING EMOTION REGULATION SKILLS TRAINING INTERVENTION

ERST was designed for the current study based on the Core Mindfulness, Distress Tolerance, and Emotion Regulation Skills modules from the Skills Training Manual for Treating

Borderline Personality Disorder (DBT Skills Training Manual; Linehan, 1993b). Nine ERST group sessions were conducted in small groups of 5 to 8 participants and the session was divided into 5 sections: introduction, core mindfulness, emotion regulation, distress tolerance, and conclusion.

Prior to data collection, two pilot test runs were conducted to evaluate ERST session timeliness, flow, content and intervention team facilitation skills and cohesiveness. Modifications to intervention content and timing were made based on anonymously written session evaluations and verbal feedback provided by pilot test participants (N =16; two separate groups) who also participated in a 1-hour post-session focus group. Based on feedback, examples of impulsive behaviors and associated consequences of emotion dysregulation presented during the introductory section of the intervention were expanded to illustrate consequences unrelated to drinking. This was done to demonstrate the applicability of improving emotion regulation skills to reduce drinking and alcohol-related consequences as well as other impulsive behaviors including procrastination, binge eating, shoplifting and road rage. General emotion regulation was also highlighted to reduce potential stigma associated with participation in an intervention to reduce heavy drinking.

In addition, many pilot test participants described skills such as 'Wise Mind' as too abstract and reported confusion as to its applicability to drinking behaviors. Consequently, examples used during the content portion of the ERST were modified to illustrate how skills were specifically applicable to general drinking situations as well as their personal reasons for drinking. For example, Wise Mind, the synthesis of both emotional and logical thinking, was

described as understanding and acknowledging emotionally-based reasons for drinking while also using logically-based planning (e.g., establishing a planned number of drinks beforehand, using a designated driver, making alternate arrangements for safe transportation if one's designated driver decides to leave early) in order to make wise drinking decisions.

Participants were also asked to report personal and typical reasons for college student drinking during the introductory portion of the session. In the event that participants did not specifically report drinking to manage stress or enhance positive emotions, the undergraduate co-facilitator, consistent with DBT, provided personally relevant examples of drinking in these situations. These examples were written on a white board and used throughout the intervention during content specific sections of the intervention. Overall results from pilot testing suggest that participants viewed the content of ERST as relevant to and useful towards reducing their drinking behaviors (see Results for specifics).

All group sessions were delivered by the Principal Investigator (PI), a certified DBT skills trainer with extensive experience leading DBT skills training groups in supervised clinical practice, and a trained undergraduate co-facilitator. Undergraduate research assistants selected to co-facilitate group sessions received ongoing supervision from the study PI after reviewing written materials. They also received extensive didactic and observational instruction. Undergraduate co-leaders were also required to co-lead one practice session and successfully pass written tests regarding privacy and ethical standards for collecting potentially sensitive data.

During ERST sessions, group leaders presented modified handouts from the Core Mindfulness, Emotion Regulation, and Distress Tolerance DBT skills training modules (Linehan,

1993b), facilitated group discussion, and led interactive group exercises that were designed to demonstrate main intervention points. In order to adhere to the spirit of DBT, intervention handouts were generally unmodified, but more abstract skills, such as Core Mindfulness skills, included brief, concrete, college-specific descriptions to facilitate understanding and post-intervention skill practice. At the conclusion of the group session, participants were given copies of all session handouts and encouraged to practice skills. The intervention session manual can be found in Appendix B: "Intervention Protocol."

Intervention Adherence. Intervention sessions were audio taped as part of the Data Safety Monitoring Plan and a random subset (n = 3) of recordings were reviewed by a licensed clinical psychologist with extensive training in DBT. Fidelity to intervention protocol (e.g., agenda-setting, clear rationales for each skill module) and adherence to core DBT principles (e.g., non-judgmental presentation, balanced didactic and experiential components) were rated by the independent psychologist using a 0 ("Poorest Possible Fidelity/Adherence") to 6 ("Excellent or Highest Possible Fidelity/Adherence") point Likert scale.

CHAPTER 5: RESULTS

DATA MANAGEMENT

After examining data for outliers, five univariate scores that were 3.29 standard deviations above or below the sample mean were transformed as the highest score plus one (Tabachnick & Fidell, 2007). Examinations of skewness (range 0.03 to 1.72) and kurtosis (range 0.93 to 4.86) indicated that all study variables were normally distributed (skew > 3; kurtosis > 10), although formal tests of normality indicated that pre, post-, and 1-month follow-up alcohol-related consequence and pre- and post-test coping and conformity motives were not normally distributed. For simplicity, results using non-transformed variables are presented as analyses using log transformed variables produced virtually identical results.

ANALYTIC OVERVIEW

As the current study used repeated measures data from participants (level 1) nested within randomly assigned intervention condition (level 2) resulting in correlation among nested units, primary study aims [i.e., intervention efficacy (Study Aim 1), intervention mechanisms of change (MOCs; Study Aim 2), and intervention moderators (Study Aim 3)] were examined using an exploratory multistage hierarchical linear modeling building approach (Hox, 2002; Raudenbush & Bryk, 2002). Along these lines, a series of preliminary analyses were conducted to specify multi-level model parameters based on observed structure of residual data (i.e., autoregressive, unstructured) and to screen for potential intervention moderators and mediators (step 1 for identifying MOAs) following guidelines suggested by the MacArthur group (Kraemer

et al., 2002). Given the number of potential intervention mediators and moderators, a series of preliminary analyses were first conducted to create composite variables in order to maximize power by reducing the number of predictor variables.

The MacArthur mediation framework (Kraemer et al., 2002) is ideal for organizing exploratory analyses among many potential intervention mediators and moderators and is primarily intended to generate causal hypotheses for future studies (MacKinnon, 2008 pg 70). Although three time points is ideal for establishing mechanisms of change by demonstrating temporal precedence, the current study design resulted in assessment of potential mediators and moderators seven days before and after intervention participation or 14 days apart for participants randomly assigned to the ERST or AO condition, respectively. Consequently, differential post-intervention changes in mediator variables in conjunction with pre-test equivalence in these variables would provide support for causal role of intervention participation in changes. As putative intervention MOAs and moderators were only assessed during pre- and post-test assessments and because the majority of change typically occurs between pre- and post-intervention assessments (Stice et al. 2007), 1-month follow-up assessment data were excluded from preliminary MOA and moderator analyses. Given that the current study represents the first exploratory empirical test of ERST, significance tests were evaluated at the $p < .05$ level. Pre- and post-test descriptive statistics for hypothesized MOAs and moderators by randomly assigned condition are included in Table 1.

Table 1. *Descriptive Statistics for Hypothesized Mechanisms of Intervention Change and Moderators*

Mechanism of Change	**AO**	**ERST**	**TOTAL**
Pre-Test Mindfulness	3.95 (0.85)	4.09 (0.87)	4.02 (0.86)
Post-Test Mindfulness	3.96 (0.88)	3.72 (1.02)	3.84 (0.96)
R	.82***	.39**	.56***
Pre-Test Emotion Regulation	3.57 (0.55)	3.52 (0.56)	3.55 (0.55)
Post-Test Emotion Regulation	3.59 (0.52)	3.62 (0.47)	3.61 (0.49)
R	.78***	.47***	.63***
Pre-Test Distress Tolerance	39.13 (6.95)	38.04 (7.01)	38.58 (6.97)
Post-Test Distress Tolerance	39.83 (6.96)	39.11 (7.33)	39.47 (7.13)
R	.68***	.53***	.60***
Moderators			
Gender			
Male	18 (33%)	19 (35%)	37 (34%)
Female	36 (67%)	35 (65%)	71(66%)
Pre-Test Enhancement Motives	2.61 (1.01)	2.65 (0.99)	2.63 (0.99)
Post-Test Enhancement Motives	2.61 (1.00)	2.59 (1.02)	2.60 (1.01)
Pre-Test Coping Motives	1.77 (0.72)	1.81 (0.62)	1.79 (0.66)
Post-Test Coping Motives	1.73 (0.68)	1.86 (0.64)	1.79 (0.65)
Pre-Test Social Motives	3.13 (0.94)	3.12 (1.02)	3.13 (0.98)
Post-Test Social Motives	2.97 (0.93)	3.09 (1.03)	3.03 (0.98)
Pre-Test Conformity Motives	1.45 (0.61)	1.50 (0.45)	1.48 (0.53)
Post-Test Conformity Motives	1.38 (0.56)	1.50 (0.57)	1.44 (0.56)
Pre-Test Readiness to Change	0.98 (1.34)	1.02 (1.30)	1.00 (1.31)
Post-Test Readiness to Change	0.76 (1.15)	1.19 (1.40)	0.97 (1.29)
Pre-Test Life Satisfaction	25.37 (6.44)	23.15 (7.62)	24.26 (7.11)
Post-Test Life Satisfaction	25.20 (7.15)	23.65 (7.51)	24.43 (7.34)

Note. There were no significant between-group differences on mean variables presented. Correlations presented represent between assessment point correlations for the entire sample and by condition.

Data Preparation.

Paired samples *t*-tests examining change over time in hypothesized intervention MOAs revealed that mindfulness unexpectedly decreased from pre- to post-test, $t(107) = -2.21$, $p < .05$, whereas increases in emotion regulation, $t(107) = 1.34$, $p = .19$, and distress tolerance, $t(107) = 1.46$, $p = .15$, approached significance. Correlations between pre- to post-test values were examined to assess reliability of change for outcome variables and potential mediators of outcome (Singer & Willet, 2002, pp. 42-44). As can also be seen in Table 1, correlations between hypothesized MOAs for the entire sample were above .5 (with the exception of mindfulness), suggesting that there was very little variation in change between assessment points. Consequently, a single residualized change score representing change over time with the influence of pre-test value removed (MacKinnon, 2008, pp. 199-200; Rogosa, 1988), was computed for each outcome and potential mediating variable. Change scores were used in subsequent analyses.

Paired samples *t*-tests also revealed that potential intervention moderators (i.e., drinking motives, readiness to change, satisfaction with life) remained stable from pre- to post-intervention across intervention conditions (all *p*-values > .05). Consequently, mean moderator scores were computed by averaging pre- and post-intervention scores and used in subsequent tests of moderation. Correlations between intervention condition, pre- to post, post- to 1-month follow-up intervention outcome variable change, potential intervention MOAs change, and mean moderator scores are presented in Table 2. Specific preliminary analyses related to each main

study aim (i.e., intervention efficacy, MOAs, and moderators) are described in subsequent sections.

Table 2. *Change Score Correlations*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Condition [a]	-													
2. Pre-Post HDC Change	-.42***	-												
3. Pre-Post RAPI Change	-.37***	.23*	-											
4. Post-1 Mo HDC Change	-.24 *	.19 [b]	.13	-										
5. Post-1 Mo RAPI Change	-.34**	.09	.46***	.33**	-									
6. Mindfulness Change	-.22*	.09	.04	.11	.10	-								
7. Emotion Reg. Change	.08	-.02	-.22*	-.16	-.25*	.24**	-							
8. Distress Tol. Change	-.01	.02	-.28***	-.02	-.14	.17[b]	.31***	-						
9. Mean Enhance Motives	.01	.30***	.16[b]	.37***	.21 [b]	-.04	-.02	-.15	-					
10. Mean Coping Motives	.07	.06	.23*	.14	.11	-.14	-.08	-.19*	0.35***	-				
11. Mean Social Motives	.03	.27***	.09	.34**	.07	-.06	-.20*	-.11	0.57***	.36***	-			
12. Mean Conform Motives	.08	-.07	.17[b]	-.03	-.10	-.10	.04	-.12	0.20*	.34***	.30***	-		
13. Gender [a]	.02	.10	-.07	-.01	-.09	-.07	-.20*	-.01	0.11	.07	.19[b]	.07	-	
14. Mean RTC	.11	.03	-.12	-.16	-.03	-.03	.06	.08	-0.09	.00	-.02	.00	-.09	-
15. Mean Life Satisfaction	-.15	.07	.03	.14	.11	.11	.13	.28***	0.14	-.16[b]	.09	-.17[b]	.10	-0.19*

Notes. [a] Serial bipoint correlation; * $p < .05$; ** $p < .01$; *** $p < .001$; [b] trend; $p \leq .10$.

SAMPLE CHARACTERISTICS

Eligible vs. Ineligible Students. Independent samples *t*-tests and Chi-Square analyses revealed no significant gender, age, or ethnicity differences (all p-values > .05) between students deemed eligible (n = 178) or ineligible (n = 90) during pre-screening. As would be expected with study criteria designed to recruit a heavy drinking sample, ineligible students reported significantly fewer past-month binge drinking episodes, $t(118.55) = -4.17$; $p < .001$, and lower AUDIT scores, $t(114.66) = -2.53$; $p < .05$, relative to eligible students.

Study completers vs. refusers. A total of 70 (52%) eligible students who did not complete at least pre- and post-intervention assessments were considered study refusers. Among study refusers, 43 (61%) did not complete pre-test measures and were replaced with other participants. A total of 27 participants (39%[a]; study drop-outs) did not complete post-test measures. Independent samples *t*-tests and Chi-square analyses revealed no significant demographic or drinking variable differences between eligible participants and study refusers during screening or between study completers and drop-outs during screening or pre-test assessments (all *p*-values > .05).

Success of Randomization. Independent samples *t*-tests and Chi-square analyses revealed no significant demographic or alcohol use differences by randomly assigned condition during the screening or pre-test assessment (all *p*-values > .05), indicating that randomization procedures successfully produced equivalent groups.

Study Retention/Differential Attrition by Intervention Condition. Regardless of randomly assigned condition, participants who completed pre-test assessments (n =130) also completed post-test (83%) and 1-month follow-up (67%) assessments. Among participants assigned to ERST, 54 (81%) attended the group session, 54 completed post-test measures (81%), and 44 (66%) completed 1-month follow up assessment. Retention rates for AO condition were similar with 54 (86%) completing the post-test and 43 (68%) completing the 1-month follow-up assessment. Notably, AO participants (n = 11) who dropped out prior to completing 1-month follow-up measures reported significantly heavier drinking during the pre- (M= 9.28; SD = 3.90; t(19) = 2.34; p < .05) and post-test (M= 8.18; SD = 4.71; t(19) = 3.35; p < .01) assessments than did ERST participants (n = 10; M_{pre} = 4.80; SD = 4.88 ; $M_{1\text{-month}}$ = 2.55; SD = 2.57). In addition, a significant condition by drinking interaction (OR = 1.28; 95% CI = 1.01 – 1.63; p > 05) for 1-month follow-up completion status (0 = not complete; 1 = complete;), indicated that heavier drinking ERST participants and lighter drinking AO participants were more likely to complete the 1-month follow-up assessment. Chi-square analyses revealed no significant differences in drop out rates or number of assessments completed by intervention condition (all p-values > .05), providing no evidence of differential attrition. Overall, there were no significant differences by intervention condition or between study completers or refusers on demographics or measures collected during screening or pre-test assessments (See Table 3).

Table 3. *Demographic, Screening, and Pre-Test Measure Comparisons for Study Refusers and Completers by Randomly Assigned Condition*

	Refusers	**Completers**	
		ERST	AO
Screening Measures	***n* =70**	***n* =54**	***n* =54**
Alcohol Dependence	8.49 (3.25)	8.19 (3.97)	7.49 (3.55)
Gender			
Men	26 (37.1%)	19 (35.2%)	18 (33.3%)
Women	44 (62.9%)	35 (64.8%)	36 (66.7%)
Ethnicity [a]			
White/Caucasian	42 (60.0%)	29 (53.7%)	35 (64.8%)
Hispanic/Latino(a)	11 (15.7%)	12 (22.2%)	3 (5.6%)
Asian/Pacific Islander	11 (15.7%)	6 (11.1%)	6 (11.1%)
Black/African American	2 (2.9%)	4 (7.4%)	0 (0.0%)
Other/More than One Ethnicity	4 (5.7%)	3 (5.6%)	10 (18.5%)
Past Month Binge Episodes	4.36 (2.62)	4.33 (2.89)	4.02 (1.97)
Age	19.61 (1.20)	19.81 (1.37)	19.55 (1.23)
Pre-Test Measures	***n* =27**	***n* =54**	***n* =54**
Alcohol Dependence	8.04 (3.44)	7.91 (4.02)	7.41 (3.27)
Alcohol-Related Consequences	2.22 (2.64)	2.93 (2.54)	3.09 (3.00)
Heavy Drinking Composite	7.87 (5.43)	6.98 (4.85)	7.82 (4.04)
Mindfulness	3.86 (0.81)	4.09 (0.87)	3.95 (0.85)
Distress Tolerance	38.04 (8.24)	38.04 (7.01)	39.13 (6.95)
Emotion Regulation	3.55 (0.59)	3.52 (0.56)	3.57 (0.55)
Life Satisfaction	24.30 (7.15)	23.15 (7.62)	25.37 (6.44)
Drinking Motives			

Table 3. *Continued*

	Refusers	ERST	AO
Social	3.32 (0.91)	3.12 (1.02)	3.13 (0.94)
Coping	2.02 (1.02)	1.81 (0.62)	1.77 (0.72)
Enhancement	2.53 (0.91)	2.65 (0.99)	2.61 (1.01)
Conformity	1.37 (0.37)	1.50 (0.45)	1.46 (0.62)
Readiness to Change Drinking	0.85 (1.26)	1.02 (1.30)	0.98 (1.34)

Note. [a] No Chi-Square Differences on Ethnicity (White vs. Collapsed Other)

Intervention Satisfaction. ERST participants anonymously rated their satisfaction with intervention and group leader characteristics and were asked to list most and least useful intervention at the conclusion of the group session. As previously discussed, pilot test and focus group feedback was used to modify intervention content to ensure relevance of ERST materials to a college student population. Based on participant written feedback from pilot testing sessions, modifications to ERST were made to increase perceived relevance of skills to the reasons why participants drink [M_{pilot} (*SD*) = 2.88 (1.02); $M_{intervention}$ (*SD*) = 3.69 (0.99)], confidence that skills could help reduce drinking [M_{pilot} (*SD*) = 3.62 (1.09); $M_{intervention}$ (*SD*) = 4.15 (0.61)], and confidence that participants would use skills to reduce drinking [M_{pilot} (*SD*) = 3.69 (1.01); $M_{intervention}$ (*SD*) = 4.04 (0.73)].

Overall, participants (*n* =54) reported a mean satisfaction score of 4.47 (*SD* = 0.34; range 0-5) and 85% indicated greater confidence that they could manage their

emotions without drinking, (59% agree; 26% strongly agree). Further, 69% of participants described the skills as relevant to reasons why they drink (52% agree; 17% strongly agree), 83% would recommend to a friend who wanted to change his/her drinking (39% agree; 44% strongly agree) and 96% would recommend to a friend who would like to learn about managing his/her emotions (30% agree; 67% strongly agree). In addition, 76% of participants said they will use skills when they feel the urge to drink to cope with emotions (28% agree; 48% strongly agree). Trained undergraduate research assistants also independently coded participants' open-ended responses assessing least and most useful aspects of the session into nine categories (e.g., session length, specific skills) that were empirically derived based on qualitative response themes. Inter-rater reliability for response coding was excellent (kappas ranged from .89 - .99). Participant satisfaction data (Means, standard deviations, minimum, and maximum ratings) are presented in Appendix C.

Intervention Adherence. An independent, licensed clinical psychologist who is certified as a DBT skills trainer rated a randomly selected subsample of ERST intervention session recordings (n = 4) to determine group leader adherence to manualized intervention protocol and principles of DBT (see Appendix B for 9 items rated). Overall adherence was 5.4 (SD = .01; 6 = highest rating) indicating that group leaders displayed "Very Good" to "Excellent" adherence during ERST sessions.

Effects of ERST Participation on Heavy Drinking and Alcohol-Related Consequences.

Preliminary Analyses. Separate condition (ERST, AO) x time (pre-test, 1-month follow-up) ANOVAs were conducted for heavy drinking and alcohol-related consequences. After controlling for pre-test heavy drinking, results revealed that ERST participants drank significantly less at post-test, $F(1,108) = 22.20$, $p < .001$, $\eta^2 = .18$, and 1-month follow-up, $F(1,87) = 5.52$, $p < .05$, $\eta^2 = .06$, relative to AO participants. After controlling for pre-test alcohol-related consequences, results revealed that ERST participants reported significantly fewer consequences at post-test, $F(1,108) = 16.88$, $p < .001$, $\eta^2 = .14$, and 1-month follow-up, $F(1,87) = 10.42$, $p < .01$, $\eta^2 = .06$, relative to AO participants. Descriptive statistics for post-test and 1-month follow-up assessments by intervention condition are presented in Table 4.

Table 4. *Outcome Variables by Intervention Condition*

	ERST Mean (SD)	AO Mean (SD)
Heavy Drinking Composite		
Pre-Test	6.98 (4.85)	7.82 (4.04)
Post-Test***	4.61 (3.35)	8.24 (4.65)
1-Month Follow Up*	5.55 (3.72)	7.02 (3.60)
Alcohol-Related Consequences		
Pre-Test	2.93 (2.54)	3.09 (3.00)
Post-Test**	1.04 (1.29)	2.70 (2.86)
1-Month Follow Up*	1.41 (1.77)	2.43 (2.32)

Note. * p <.05, ** p <.01, *** p <.001

Intervention Efficacy. Intervention effects on heavy drinking composite (HDC) score and alcohol-related consequences (RAPI) change over time were separately tested using general linear mixed models (GLMMs; McCullough, 2003, pp. 29-53; West, Welch, & Gatecki, 2007, pp. 1-8). GLMMs are a type of multilevel model which allow inclusion of partial data from participants who did not complete both the post-test and 1-month follow-up. Further, GLMMs flexibly accommodate model building based on the underlying residual structure of the data (e.g., autoregressive heterogeneity, unstructured), resulting in more accurate parameter estimates and increased power to detect significant effects relative to traditional repeated measures ANOVAs (Gueorguieva & Krystal, 2004; Kristjansson, Kircher, & Webb, 2007).

First, separate unconditional growth models (baseline) with time (pre-test, post-test, 1-month follow up) as the only predictor of changes in heavy drinking (HDC) and alcohol-related consequences (RAPI) were constructed to examine variability across time and participants. As both HDC and RAPI scores were strongly correlated between assessment points (see Table 5), a series of exploratory analyses were used to construct final baseline models that best fit observed Level-1 error variance structures. Comparisons of model fit indices indicated that autoregressive (AR1) GLMM models best fit both HDC (AIC = 1646.29) and RAPI (AIC = 1291.21) change over time.

Table 5. *Outcome Variable Correlations over Time*

	1.	2.	3.	4.	5.	6.
1. Pre-Test HDC	-					
2. Post-Test HDC	.46***	-				
3. 1-Mo Follow Up HDC	.59***	.61***	-			
4. Pre-Test Consequences	.31**	.22*	.18	-		
5. Post-Test Consequences	.30**	.35***	.33**	.37***	-	
6. 1-Mo Follow Up Consequences	.43***	.42***	.39***	.61***	.77***	-

Notes. * $p < .05$; ** $p < .01$; *** $p < .001$.

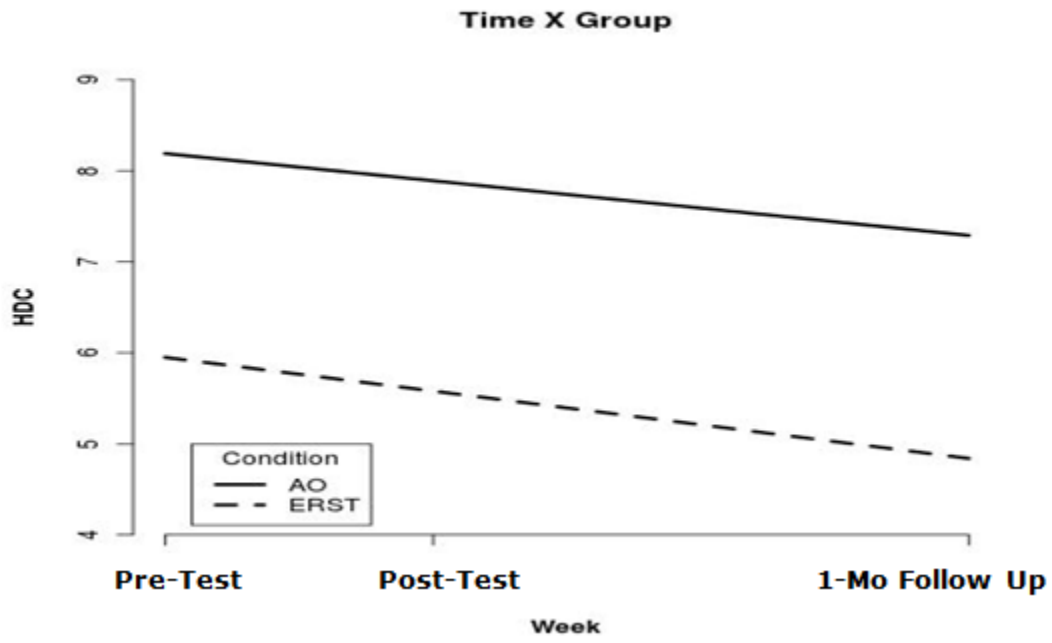
In all models, time was coded to account for uneven intervals between assessments (pre-test = 0; post-test = 1; 1-month follow-up = 3) such that the intercept represented pre-intervention outcome variable values. As preliminary analyses revealed that changes in alcohol-related consequences over time were not linear, a quadratic term was introduced to model non-linear effects. The effect of intervention condition on changes in heavy drinking and alcohol-related consequences over time were tested by adding dummy coded intervention condition variable (1 = ERST; 0 = AO) as a level 2 fixed predictor to the separate unconditional (baseline) growth models. As AO was dummy coded as 0, significant cross-level interactions between intervention and time represented effects of ERST participation relative to AO control on change across time in the outcome variable. Partial correlation coefficients, derived from *t*-values and degrees of freedom (Lipsey & Wilson, 2001) were computed to estimate effect sizes.

Intervention Impact on Heavy Drinking. The unconditional quadratic model of time was fit for the heavy drinking composite (AIC = 1669.42) and indicated significant linear (γ_{10} = -0.38, $SE\gamma$ = .14, $p < .01$) rate of change over time. The ICC was .49,

indicating that approximately half of the variance in change over time was accounted for by individual differences. Intercepts, representing pre-test heavy drinking, were allowed to vary by individual. Slope was specified as a group-level effect.

The conditional model fit indices (AIC = 1646.08) indicated that adding intervention condition and condition by time interactive term improved model fit. In addition, condition was significantly related to heavy drinking on average, γ_{01} = -2.24, $SE\gamma$ = .75, ES_{sm} = .53; p > .01, such that ERST participants reported significantly fewer heavy drinking episodes during each assessment point relative to AO participants. As can be seen in Figure 2, slope by condition however did not significantly vary, γ_{11} = -.07, SE γ_{11} = .23, ES_{sm} = .05, p > .05, indicating that intervention condition did not significantly impact rate of change in heavy drinking over time.

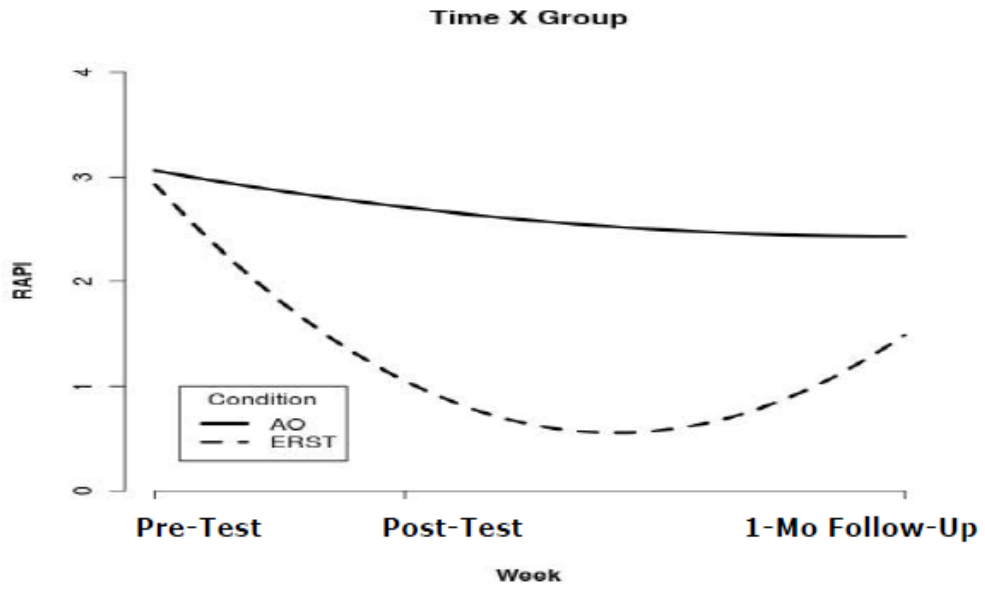
Figure 2. Change in Heavy Drinking by Condition over Time



Intervention impact on alcohol-related consequences over time. The unconditional quadratic model of time was fit for alcohol-related consequences (AIC = 1328.49) and indicated significant linear ($\gamma 10$ = -1.50, $SE\gamma$ = .32, $p < .001$) and quadratic ($\gamma 20$ = 0.38, $SE\gamma$ = .10, $p < .001$) rates of change over time. The ICC was .50, indicating that approximately half of the variance was accounted for at the individual level. As with the heavy drinking model, intercepts, representing pre-test alcohol-related consequences, were allowed to vary by individual. Slopes (i.e., linear and quadratic change in alcohol-related consequences over time) were specified as a fixed group-level effect.

In the alcohol-related consequences conditional model (AIC = 1274.62), condition was not significantly related to alcohol-related consequences on average, $\gamma 01$ = -0.13, $SE\gamma$ = .55, ES_{sm} = -.04; $p > .05$. Further, overall linear, γ_{10} = -.42, SE γ_{10} = .52, ES_{sm} = -.14, $p > .05$, and quadratic slopes, γ_{20} = .07, SE γ_{20} = .15, ES_{sm} = .08, $p > .05$, were not significant, indicating no main effects of condition or time. Intervention condition however, significantly impacted linear rate of change over time (group x time; $\gamma 11$ = -2.16, $SE\gamma$ = .73, ES_{sm} = -.52; $p < .01$) and the curvature of change (group x time; $\gamma 21$ = 0.63, $SE\gamma$ = 0.21, ES_{sm} = .52; $p < .01$) in alcohol-related consequences over time. As illustrated in Figure 3, ERST participants showed faster pre- to post-test reductions (i.e., linear rate of change) in alcohol-related consequences but showed significantly accelerated increases (i.e., quadratic rate of change) between post-test and 1-month follow-up assessments relative to AO control participants.

Figure 3. Changes in Alcohol-Related Consequences by Condition over Time



Consistent with study hypotheses, cross-sectional results revealed that ERST participants showed greater post-intervention and 1-month follow-up reductions in heavy drinking and alcohol-related consequences relative to AO participants. Although ERST participation was not associated with changes in heavy drinking over time, it did significantly predict changes in alcohol-related consequences over time. Current cross-sectional findings provide preliminary support for the efficacy of ERST for reducing college student heavy drinking and alcohol-related consequences.

Preliminary Analyses

Between groups analyses. Independent samples *t*-tests revealed no significant between condition differences on hypothesized intervention mediators during pre- or post-test assessment (all *p*-values > .05). Results did not support study hypothesis 2a- 2c as ERST participation did not lead to significantly greater pre- to post-test increases in mindfulness, emotion regulation, or distress tolerance relative to AO. Despite overall lack of changes in hypothesized MOAs, ERST participants exhibited greater pre- to post-test changes relative to AO participants as evidenced by differences in temporal stability for hypothesized MOAs, suggesting that patterns of change were different across conditions. Consequently, the independent influence of hypothesized MOAs was still examined in step 4 regression equations that included condition by mediator interactive terms in order to explore differential impact of MOAs by condition.

Tests of intervention mediation.

According to the MacArthur framework, mediation is established by demonstrating: (1) temporal precedence of intervention, (2) an association between the mediator and intervention, and (3) significant mediator main or mediator/intervention interactive effects on outcome variable. The current study design satisfied criterion 1 (temporal precedence) as potential intervention mediators and moderators were assessed prior to randomization (pre-test) and after intervention participation, or 14 days delay,

based on random assignment. Consistent with MacArthur guidelines (Kraemer et al., 2002), separate general linear models included outcome variable change score as the dependent variable and intervention condition, hypothesized mediator change score, and their interaction as predictor variables. As recommended by Kraemer and Blasey (2004), intervention condition was first effect coded (-1= AO; 1 = ERST) such that intercept parameter estimates represented deviation from condition mean. Further residualized change scores for hypothesized mediators represented deviation from zero (i.e., no pre- to post-test change) and are considered to be centered change scores.

Mediators of Heavy Drinking Change. As can be seen in Table 6, condition predicted pre-post intervention changes in heavy drinking, such that ERST participants drank significantly less than AO participants. Examination of intervention effects on hypothesized mechanisms of change revealed that condition was significantly associated with mindfulness change. Inconsistent with study hypotheses, ERST participants actually reported greater pre- to post-intervention decreases in mindfulness relative to AO participants. There were no significant condition by mindfulness, emotion regulation, or distress tolerance change score main or interactive by condition effects on pre- to post-intervention changes in heavy drinking, indicating that these variables did not mediate intervention effects on changes in heavy drinking.

Table 6. *Mediation Tests for Pre- to Post-Test Changes in Heavy Drinking Composite*

	β	*SE*	95% CI	*p-value*	effect size
Step 1					
Condition→ Heavy Drinking Change	**3.25**	**0.69**	**1.88 - 4.62**	**> .001**	**0.18**
Step 2[a]					
Condition→ Mindfulness Change	**0.34**	**0.15**	**0.04 - 0.63**	**.03**	**0.05**
Condition→ Emotion Regulation Change	0.59	0.07	-0.21 - 0.09	.42	0.01
Condition→ Distress Tolerance Change	0.05	1.10	-2.13 – 2.24	.96	0.00
Step 3					
Condition	**3.10**	**0.71**	**1.69 - 4.51**	**> .001**	**0.16**
Mindfulness Change	-0.43	0.51	-1.45 – 0.59	.41	0.01
Mindfulness Change x Condition	1.75	1.05	-0.33 – 3.83	.09	0.03
Step 3					
Condition	**3.27**	**0.70**	**1.89 - 4.65**	**> .001**	**0.18**
Emotion Regulation Change	-0.78	1.16	-3.08 – 1.53	.50	0.00
Emotion Regulation Change x Condition	2.24	1.88	-1.48 – 5.96	.26	0.01
Step 3					
Condition	**3.25**	**0.70**	**1.87 - 4.63**	**> .001**	**0.17**
Distress Tolerance Change	0.02	0.08	-0.14- 0.18	.81	0.00
Distress Tolerance Change x Condition	-0.01	0.13	-0.26 - 0.24	.95	0.00

Notes. ***Bold Terms were significant;*** [a] Step 2 tested with separate models

Mediators of alcohol-related consequence change. As with examinations of mediators of heavy drinking change, neither condition nor hypothesized mediators were associated with changes in alcohol-related consequences (see Table 6). Results, however,

revealed significant condition by emotion regulation change interaction, β = -2.23, CI: -4.27 – [-.186]; $p < .05$, $\eta^2 = .04$, and condition by distress tolerance change interaction, β = -0.16, CI: -0.29 – [-.028]; $p < .05$, $\eta^2 = .05$, for consequence change. Simple slopes analysis indicated that greater changes in emotion regulation, β = 2.50; 95% CI 4.52 – .28; $p < .05$, $\eta^2 = .11$, and distress tolerance, β = 0.21; 95% CI 0.33 – .08; $p < .01$, $\eta^2 = .17$, were associated with greater increases in alcohol related consequences for participants assigned to AO condition. Overall, results indicate that mediation for the hypothesized mechanisms of change was not supported for any of the relations between condition and heavy drinking or alcohol-related consequences. Hypothesized MOAs were therefore not entered into final GLMM models. Significant interaction findings, in conjunction with post-intervention stability in emotion regulation and distress tolerance, suggest that emotion regulation and distress tolerance moderated intervention efficacy (MacKinnon, 2008), such that ERST participation may have protected against increases in alcohol-related consequences despite lower emotion regulation and distress tolerance.

Table 7. *Mediation Tests for Pre- to Post-Test Changes in Alcohol-Related Consequences*

	β	*SE*	95% CI	*p-value*	effect size
Step 1					
Condition→ Consequence Change	**1.62**	**0.39**	**0.84 - 2.41**	**> .001**	**0.14**
Step 2[a]					
Condition→ Mindfulness Change	**0.34**	**0.15**	**0.04 - 0.63**	**.03**	**0.05**
Condition→ Emotion Regulation Change	0.59	0.07	-0.21 - 0.09	.42	0.01
Condition→ Distress Tolerance Change	0.05	1.10	-2.13 – 2.24	.96	0.00
Step 3					
Condition	**1.72**	**0.41**	**0.92- 2.53**	**> .001**	**0.15**
Mindfulness Change	0.02	0.30	-0.56 - 0.61	.93	0.00
Mindfulness Change x Condition	-0.63	0.60	-1.83 - 0.56	.30	0.01
Step 3					
Condition	**1.54**	**0.38**	**0.79 - 2.30**	**> .001**	**0.14**
Emotion Regulation Change	-0.27	0.64	-1.54 - 0.99	.67	0.00
Emotion Regulation Change x Condition	**-2.23**	**1.03**	**-4.27 - 0.19**	**.03**	**0.04**
Step 3					
Condition	**1.63**	**0.37**	**0.90 - 2.36**	**> .001**	**0.16**
Distress Tolerance Change	-0.05	0.04	-0.13 - 0.04	.28	0.01
Distress Tolerance Change x Condition	**-0.16**	**0.07**	**-0.29 -0.03**	**.02**	**0.05**

Notes. ***Bold Terms were significant;*** [a] Step 2 tested with separate models

HYPOTHESIZED INTERVENTION MODERATORS

According to the MacArthur framework, moderation is supported by demonstrating: (1) temporal precedence of intervention, (2) independence from intervention, and (3) significant moderator by intervention interactive effects on outcome variable (Kraemer et al., 2002). Similar to tests of potential intervention mediators, current study design satisfied the first condition of temporal precedence (Criterion 1) and stability of pre- to post-intervention moderators satisfied the independence requirement (Criterion 2). Criterion 3 was examined using a series of separate general linear models that were conducted with residualized change scores of outcome variable as the dependent variable. Potential moderators were centered using guidelines provided by Kraemer and Blasey (2004), and entered as a predictor variable along with effect-coded intervention condition (ERST = 1; AO = -1) and their interactive term. Moderation models were simplified by excluding non-significant interaction terms to examine non-specific effects of moderator on outcome variables. Results for moderator analyses are summarized in Tables 8 (Heavy Drinking Composite) and 9 (Alcohol-Related Consequences).

Table 8. *Moderation Tests for Pre- to Post-Test Changes in Heavy Drinking Composite*

	B	*SE*	95% CI	*p-value*	effect size
Condition	**3.26**	**0.64**	**2.00 - 4.52**	**> .001**	**0.20**
Enhancement Motives	0.30	0.52	-0.73 - 1.33	.56	0.00
Enhancement x Condition	**1.87**	**0.70**	**0.47 - 3.25**	**.01**	**0.06**
Condition	**3.30**	**0.70**	**1.92 - 4.68**	**> .001**	**0.18**
Coping Motives [a]	0.63	0.59	-0.55 - 1.81	.29	0.01
Cope x Condition	0.41	1.22	-2.00 - 2.82	.74	0.00
Condition	**3.31**	**0.66**	**2.01 - 4.61**	**> .001**	**0.20**
Social Motives [a]	**1.24**	**0.37**	**0.50 - 1.98**	**.001**	**0.10**
Social x Condition	1.04	0.74	-0.43 - 2.51	.16	0.02
Condition	**3.23**	**0.70**	**1.85 - 4.62**	**> .001**	**0.17**
Conformity Motives [a]	-0.30	0.72	-1.72 - 1.13	.68	0.00
Conformity x Condition	-0.60	1.47	-3.52 - 2.33	.67	0.00
Condition	**3.99**	**1.18**	**1.65 - 6.34**	**.001**	**0.10**
Gender	-0.70	0.73	-2.14 – 0.75	.34	0.00
Gender x Condition	-1.11	1.46	-4.00 - 1.78	.45	0.00
Condition	**3.31**	**0.69**	**1.93 - 4.69**	**> .001**	**0.18**
Readiness to Change (RTC)	0.29	0.33	-0.36 – 0.95	.38	0.01
RTC x Condition	-0.76	0.66	-2.05 – 0.55	.25	0.01
Condition	**3.25**	**0.70**	**1.85 - 4.64**	**> .001**	**0.17**
Life Satisfaction	0.01	0.11	-0.10 – 0.11	.94	0.00
Life Satisfaction x Condition	0.07	0.11	-0.15 - 0.28	.56	0.00

Notes. ***Bold Terms were significant;*** [a] Main effects with NS interactive term removed.

Table 9. *Moderation Tests for Pre- to Post-Test Changes in Alcohol-Related Consequences*

	B	*SE*	95% CI	*p-value*	effect size
Condition	**1.63**	**0.38**	**0.87 - 2.38**	**> .001**	**0.15**
Enhancement Motives	-0.20	0.31	-0.81 - .42	.52	0.01
Enhancement x Condition	**1.07**	**0.42**	**0.24 - 1.90**	**.01**	**0.06**
Condition	**1.69**	**0.37**	**0.96 - 2.41**	**> .001**	**0.17**
Coping Motives	-0.27	0.50	-1.25 - .71	.59	0.01
Coping x Condition	**2.05**	**0.64**	**0.78 – 3.31**	.002	0.09
Condition	**1.64**	**0.39**	**0.86 - 2.41**	**> .001**	**0.15**
Social Motives [a]	0.26	0.22	-0.18 – 0.70	.25	0.01
Social x Condition	0.70	0.44	-0.18 - 1.57	.12	0.23
Condition	**1.69**	**0.39**	**0.93 - 2.45**	**> .001**	**0.16**
Conformity Motives [a]	**0.93**	**0.40**	**0.14 – 1.73**	**.02**	**0.05**
Conformity x Condition	1.22	0.81	-0.39 - 2.83	.14	0.02
Condition	**1.83**	**0.68**	**0.48 - 3.17**	**.008**	**0.07**
Gender	-0.04	0.42	-0.87 – 0.79	.92	0.00
Gender x Condition	-0.31	0.84	-1.97 - 1.36	.72	0.00
Condition	**1.59**	**0.40**	**0.80 - 2.38**	**> .001**	**0.13**
Readiness to Change (RTC)	-0.16	0.19	-0.53 – 0.21	.40	0.01
RTC x Condition	0.05	0.38	-0.70 - 0.81	.89	0.00
Condition	**1.69**	**0.40**	**0.89 - 2.47**	**> .001**	**0.15**
Life Satisfaction	-0.03	0.03	-0.09 – 0.03	.35	0.01
Life Satisfaction x Condition	-0.04	0.06	-0.16 - 0.09	.57	0.00

Notes. ***Bold Terms were significant;*** [a] Main effects with NS interactive term removed.

Drinking Motives and Heavy Drinking Change. Results revealed that enhancement motive by condition significantly predicted pre- to post-test changes in heavy drinking. Tests of simple effects, however, indicated that AO participants with stronger enhancement drinking motives, $\beta = 2.16$, $p < .001$, $\eta^2 = .26$, showed significantly greater pre- to post-test increases in heavy drinking relative to ERST participants with stronger enhancement motives. Tests of simple slopes revealed that ERST participants with stronger enhancement motives maintained the same levels of pre- to post-intervention heavy drinking whereas AO participants demonstrated increased heavy drinking.

Contrary to hypotheses, there were no significant main or condition by coping motive effects on changes in heavy drinking. No other significant intervention condition by drinking motive interactions emerged for pre-to post-test changes in heavy drinking (all *p*-values > .05). There was, however, a significant main effect indicating that individuals with stronger social motives significantly increased heavy drinking from pre- to post-test assessments, $\beta = 1.24$, $p < .01$, $\eta^2 = .10$, regardless of intervention condition.

Drinking motives and changes in alcohol-related consequences. Results revealed that enhancement and coping motives by condition interactions significantly predicted pre- to post-test changes in alcohol-related consequences. Tests of simple effects, however, indicated that AO participants with stronger enhancement drinking motives, $\beta = 0.87$, $p < .05$, $\eta^2 = .11$, showed greater pre- to post-test increases in alcohol-related consequences relative to AO participants or ERST participants with lower

enhancement motives. Similarly, AO participants with stronger coping drinking motives, β = 0.87, $p < .05$, $\eta^2 = .11$, showed greater pre- to post-test increases in alcohol-related consequences relative to AO participants or ERST participants with lower coping motives. ERST participants with stronger enhancement and coping motives maintained similar levels of pre- to post-intervention alcohol-related consequences whereas AO participants with similar reasons for drinking demonstrated increases. No other significant condition by drinking motive interactions emerged for pre-to post-test intervention changes in alcohol-related consequences (all *p*-values > .05). There was however a main effect of conformity motives, β = .93, $p < .05$, $\eta^2 = .05$, such that individuals with stronger conformity motives reported significantly greater increases in pre- to post-test alcohol-related consequences, regardless of intervention condition.

Gender. There were no significant main or interactive effects for gender on either heavy drinking or alcohol-related consequences (all *p*-values > .05), indicating that gender did not moderate intervention efficacy.

Readiness to Change. There were no significant main or interactive effects of readiness to change (RTC) drinking during post-test assessment (all *p*-values > .05), indicating that RTC did not moderate intervention efficacy.

Life Satisfaction. Results revealed no significant condition by life satisfaction interactive or life satisfaction main effects on either heavy drinking or alcohol-related consequences (all *p*-values > .05). Further, pre- and post-test life satisfaction scores were not correlated with heavy drinking or alcohol-related consequences at any assessment

point. As can be seen in Table 2, there were trends indicating that higher life satisfaction was inversely correlated with both coping and conformity drinking motives, suggesting that individuals with lower life satisfaction endorsed stronger coping and conformity reasons for drinking. Finally, greater life satisfaction was correlated with higher distress tolerance, measured as lower experiential avoidance, as well as lower readiness to change drinking.

SECONDARY ANALYSES

Post-hoc analyses of post-emotion regulation skills training session skill use. As can be seen in Table 10, ERST participants reported frequently used skills taught during the intervention session and the majority described skills as at least somewhat helpful alternatives to drinking for managing their emotions.

Table 10. *Diary Card Past Week ERST Skill Use and Helpfulness Ratings for Managing Emotions without Drinking*

	Used Skill	Not Used	Not Helpful	Somewhat/ Moderately Helpful	Very/Extremely Helpful
Mindfulness					
Wise Mind	38 (70.3%)	16 (29.6%)	5 (9.3%)	23 (42.6%)	10 (18.5%)
Observe	38 (70.3%)	16 (29.6%)	4 (7.4%)	24 (44.4%)	10 (18.5%)
Describe	34 (62.9%)	20 (37.0%)	3 (5.6%)	20 (37.0%)	11 (20.4%)
Participate	36 (66.6%)	18 (33.3%)	2 (3.7%)	18 (33.3%)	16 (29.6%)
Nonjudgmental Stance	32 (59.2%)	22 (40.7%)	0 (0%)	25 (46.3%)	7 (13.0%)
One-mindfully	31 (54.7%)	23 (42.6%)	0 (0%)	20 (37.0%)	11 (20.4%)
Emotion Regulation					
PLEASE skills*	33 (61.1%)	21 (38.9%)	2 (3.7%)	23 (42.6%)	8 (14.8%)
Mindfulness to positive emotions	38 (70.3%)	16 (29.6%)	4 (7.4%)	22 (40.7%)	12 (22.2%)
Mindful of Positives	33 (61.1%)	21 (38.9%)	0 (0%)	16 (29.6%)	17 (31.5%)
Unmindful of Worries	33 (61.1%)	21 (38.9%)	3 (5.6%)	24 (44.4%)	6 (11.1%)
Mastery*	34 (62.9%)	20 (37.0%)	3 (5.6%)	19 (35.2%)	12 (22.2%)
Positive (substance-free) experiences	37 (68.5%)	17 (31.5%)	1 (1.9%)	21 (31.8%)	12 (22.2%)
Opposite action	30 (55.5%)	24 (44.4%)	3 (5.6%)	21 (38.9%)	6 (11.1%)
Distress Tolerance					
Wise mind Accepts	31 (54.7%)	23 (46.2%)	1 (1.9%)	23 (46.2%)	7 (13.0%)
Self-soothe	32 (59.2%)	22 (40.7%)	0 (0%)	21 (38.9%)	11 (20.4%)
IMPROVE *	31 (54.7%)	23 (42.6%)	2 (3.7%)	18 (33.3%)	11 (20.4%)
Pros and cons	38 (70.3%)	16 (29.6%)	3 (5.6%)	21 (38.9%)	14 (25.9%)
Half-smiling	33 (61.1%)	21 (38.9%)	4 (7.4%)	15 (27.8%)	14 (25.9%)

Note. * PLEASE: treat **P**hysical i**L**lness; healthy **E**ating; no mind-**A**ltering drugs; balanced **S**leep; get **E**xercise; MASTERY: refers to self-efficacy building exercises; IMPROVE: **I**magery; **M**eaning; **P**rayer; **R**elaxation; **O**ne thing at a time; **V**acation; **E**ncouragement

As hypothesized mechanisms of action questionnaires may have assessed trait-level mindfulness, emotion regulation, and distress tolerance, post-hoc secondary

regression analyses examining ERST participants' post-intervention skill use and perceived helpfulness were conducted to explore potential mechanisms of intervention efficacy. After controlling for pre-test alcohol-related consequences, past week use of mindfulness skills predicted significantly more alcohol-related consequences, $B = 1.94$, $p < .001$, $\eta^2 = .23$, during post-test and 1-month follow-up, $B = 1.95$, $p < .05$, $\eta^2 = .10$, assessments. Consistent with expectations, past week use of emotion regulation skills predicted significantly fewer alcohol-related consequences, $B = -1.99$, $p < .001$, $\eta^2 = .23$, during post-test and 1-month follow-up, $B = -2.11$, $p < .05$, $\eta^2 = .12$, assessments. Skill use was not associated with heavy drinking, all p-values > .05.

CHAPTER 6: DISCUSSION

The current study represents the first empirical examination of the effects of Emotion Regulation Skills Training (ERST) on college student drinking and associated consequences. The three primary aims of the current study were to examine: (a) the efficacy of ERST, a single 3-hour group session of modified Dialectical Behavior Therapy (DBT) skills training, incorporating Mindfulness, Emotion Regulation, Distress Tolerance skills as an intervention for reducing college student heavy drinking and associated consequences, (b) theoretically-informed mechanisms of change (i.e., changes in mindfulness, emotion regulation, distress tolerance) through which ERST produced changes in heavy drinking and consequences, and (c) intervention moderators (i.e., gender, readiness to change, internal drinking motives, life satisfaction).

Overall, findings provided support for the intervention's feasibility and potential efficacy for reducing heavy drinking and alcohol-related consequences (aim a). While the hypothesized mechanisms of change were not supported (aim b), use of the MacArthur framework (Kraemer et al., 2002) indicated that emotion regulation and distress tolerance were important moderators of intervention efficacy. Additionally, findings supported enhancement and coping motives for drinking as intervention moderators, but did not find moderating effects of gender, readiness to change, or life satisfaction (aim c). Specific findings related to each study aim are discussed in the sections below.

INTERVENTION FEASIBILITY AND EFFICACY

The current study demonstrated the feasibility of ERST as a new intervention strategy for reducing heavy college student drinking as session participants reported high satisfaction with intervention content. Participants also described ERST content as both useful and relevant to the reasons they drink and indicated frequently using skills taught during the group session to resist drinking as a maladaptive emotion regulation strategy. In addition, independent review indicated that interventionists adhered to key principles of DBT and consistently delivered the manualized protocol developed for the current study. Findings also provided initial support for ERST as a cost-effective intervention as current efficacy findings were promising when the intervention was delivered by a single Master's-level clinician with DBT skills training group experience and an undergraduate peer assistant. Despite differences in study participants, design, and intervention length, current findings are consistent with previous research demonstrating the utility of abbreviated DBT skills training for reducing impulsive behaviors conceptualized as maladaptive emotion regulation strategies (e.g., methamphetamine use; Shultz-Fisher, 2007; binge eating; Safer et al. 2001, Telch et al., 2001).

Impact of ERST on heavy drinking and associated consequences. In terms of the intervention's efficacy, results partially supported hypotheses that ERST reduces heavy drinking and alcohol-related consequences relative to assessment-only (AO) control. Consistent with study hypotheses, cross-sectional ANOVA results indicated that ERST participants reported significantly greater decreases in heavy drinking and alcohol-

related consequences during both the post-intervention and 1-month follow-up assessments relative to AO participants. In addition to evaluating cross-sectional between group differences in outcome variables, the current study also examined between group differences in rates of change in heavy drinking and alcohol-related consequences.

Impact of ERST on rates of changes in heavy drinking and associated consequences over time. Despite reporting heavier drinking than ERST participants during both the post-test and 1-month follow-up assessments, AO participants' rates of change in heavy drinking over time did not differ from those of ERST participants. Although preliminary analyses revealed no evidence for differential attrition based on pre-test variables, additional comparisons revealed that AO participants reporting heavier pre-test drinking and ERST participants reporting lighter pre-test drinking respectively, were less likely to complete the 1-month follow-up assessment. Thus, AO participants who completed the 1-month follow-up assessment were typically lighter drinkers than ERST participants who completed the 1-month follow-up assessment. This interesting finding suggests that ERST participation may have led to greater retention of heavier drinkers, but may have also masked between-group differences in changes over time.

Consistent with expectations, ERST participants demonstrated faster initial post-intervention rates of decrease in alcohol-related consequences relative to AO participants. Significant quadratic effects, however, revealed that while rates of alcohol-related consequences among AO participants remained relatively flat, ERST participants began to experience increased alcohol-related consequences by the 1-month follow-up

assessment. There were no differences in alcohol-related consequences during the pre- or post-test assessments between AO and ERST participants who did and did not complete the 1-month follow-up assessment. It is possible, however, that greater retention of heavy drinking ERST participants over time may also account for the increases in associated consequences.

HYPOTHESIZED MECHANISMS OF CHANGE

The second aim of the current study was to examine hypothesized mediators (i.e., mindfulness, emotion regulation, distress tolerance) through which ERST participation enacted changes in drinking behaviors. Examinations of between group differences (i.e., the first step in establishing mechanisms of change; Kazdin et al., 2007) indicated no mean differences in emotion regulation or distress tolerance between ERST and AO participants at any time point during the study. Unexpectedly however, ERST participation resulted in significantly lower mindfulness scores at post-test relative to AO participation. These changes, however, were not associated with post-intervention changes in heavy drinking or alcohol-related consequences. Current findings were unable to support the role of hypothesized mechanisms through which ERST participation led to reductions in heavy drinking or alcohol-related consequences.

One possible explanation for the current study's failure to statistically support hypothesized mechanisms of change (MOCs) is the timing of assessment of the proposed mechanisms of change. Hypothesized MOCs were only assessed during pre- and post-test which occurred within approximately 14 days of each other. The very short follow-up

period used in the current study may not have been adequate to capture changes in MOCs over time that may have become more apparent by 1 month follow-up.

A second possible explanation for the current study's failure to statistically support the hypothesized MOCs is that the instruments selected to measure the constructs were trait- rather than behaviorally-based. Specifically, the current study hypothesized, based on a DBT framework, that ERST participation would decrease experiential avoidance by increasing distress tolerance. Consequently, distress tolerance was measured with the Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004), which assesses experiential avoidance. Poor distress tolerance, although conceptually similar, is not identical to experiential avoidance, which represents a trait-level inability or unwillingness to endure uncomfortable emotions and situations.

Similar to the parent DBT module, distress tolerance skills were presented as temporary distraction techniques designed to help participants manage difficult situations without making them worse. Further, the Distress Tolerance section of ERST included adaptive behavioral skills designed to help participants distract from distress that were not assessed through the AAQ. Moreover, decreased experiential avoidance is most closely related to radical acceptance and mindfulness to current emotions, which are the most advanced acceptance-based distress tolerance and emotion regulation skills (Linehan, 1992a, b). Although these skills were taught during the session, they were presented as the "Superbowl" of mindfulness skills. Participants were explicitly encouraged to practice these skills during times of relatively low to moderate distress in

preparation for times when acceptance would be the most effective strategy for continuing goal-directed behaviors during times of extreme affect (e.g., taking the MCAT after a relationship breakup). Similarly, the Negative Mood Regulation and Mindfulness Acceptance and Action questionnaires assessed more trait-based aspects of emotion regulation.

Although there were other measures available, conceptually distinct trait-based measures were selected in an attempt to better understand the impact of ERST on Mindfulness, Emotion Regulation, and Distress Tolerance. For example, the Difficulties with Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) assesses six separate and strongly correlated aspects of emotion regulation and was initially ruled out for inclusion in the current study due to its inability to disentangle the impact of ERST on the higher order (i.e., trait-related) skills needed to adaptively manage emotional states.

Fortunately, the current study also included a behaviorally-based measure of post-intervention skill use (i.e., DBT skills diary card) and secondary exploratory analyses of proposed mediators. As ERST participants completed the diary card during the post-test assessment only, the current study was unable to examine behavioral diary card data to examine potential mechanisms of change. Secondary analyses, however, added to the current literature and revealed interesting post-hoc moderator findings.

Secondary Diary Card Analyses. Secondary findings related to diary card data provided additional support for the possibility that trait-based measures may not have adequately assessed behavioral use of skills taught in session. First, trait-based measures

were not correlated with diary card reports of ERST participant past week skill use. Secondly, ERST participants reported frequently using mindfulness, distress tolerance, and emotion regulation skills on their diary cards, suggesting that participants used skills not captured by the trait-based measures. In contrast to analyses of trait-based measures, secondary analyses of behaviorally-based skill use indicated that more frequent past week use of emotion regulation skills was associated with fewer alcohol-related consequences during the post-test and 1-month follow-up assessments.

Curiously, secondary analyses of diary card data also revealed that using mindfulness skills more frequently was associated with more alcohol-related consequences during the past week. As mentioned above, findings indicated that ERST participation led to reduced trait-level mindfulness. Although unexpected, it is possible that ERST participants who used mindfulness skills taught during the intervention paid more attention to their behaviors resulting in a greater awareness of typical frequency of "mindless" experiences. Given that ERST participants may have become more attuned to their experiences, it is possible that these findings may reflect a more accurate assessment of typical mindfulness and alcohol-related consequences.

In general, it is unknown how participants used skills taught during the intervention. Although the diary card assessed skill use and helpfulness towards resisting the urge to drink to manage emotions, examples of many impulsive behaviors and emotionally dysregulated behaviors were presented throughout the session to illustrate the applicability of emotion regulation skills across multiple domains independent of

drinking situations. Based on this, it is possible that these individuals used skills learned during ERST towards reducing other impulsive behaviors or to regulate emotions in order to reduce other impulsive behaviors (e.g., procrastination, overeating). For example, procrastination was described as a multitude of impulsive behaviors, including choosing to drink, in order to avoid uncomfortable emotions associated with the prospect of completing an unwanted task. Facilitators used procrastination as well as recent problematic drinking situations described by session participants in a DBT-style chain analysis (Linehan, 1993b) to illustrate the complex process of emotion regulation. In addition to exploring antecedents and behavioral consequences, these exercises were intended to provide a concrete illustration of how understanding more specific reasons that motivate impulsive behaviors can help participants identify specific changes they can make to reduce the likelihood of acting impulsively.

In addition, mindfulness skills were presented as the vehicle for making 'Wise Mind' decisions by planning and implementing adaptive protective strategies, based on awareness of typical behavioral patterns, including emotional antecedents, situational influences, and potential consequences associated with impulsivity. Mindfulness skills were also described as a necessary process prior to selecting the most appropriate Emotion Regulation or Distress Tolerance skill based on situational demands. Consistent with DBT skills training, ERST Emotion Regulation (e.g., adequate sleep, exercise) and Distress Tolerance (e.g., self-soothing through music) modules include many common sense skills that participants frequently reported using during interactive discussion of

current alcohol-free strategies for managing strong emotions. In-line with the exploratory design of the current study, ERST participants only completed the DBT diary card during a single time point. Without a baseline assessment of skill use, it is unclear whether intervention participation affected skill use among this non-clinical student sample. For example, ERST participation may have simply increased or reinforced current use of these strategies. Future studies including pre-intervention use of behavioral emotion regulation skills could help clarify these findings.

Exploratory Moderator Analyses. Although the current study failed to provide statistical support for the hypothesized mediators of ERST efficacy, tests using the exploratory MacArthur framework (Kraemer et al., 2002, MacKinnon et al., 2008) indicated that trait-level emotion regulation and distress tolerance moderated pre- to post-intervention changes. Mirroring the behavioral-based diary card findings, trait-level emotion regulation and distress tolerance were not associated with changes in heavy drinking, but moderated the impact of ERST on alcohol-related consequences. Specifically, ERST participants reported fewer alcohol-related consequences at the end of the study regardless of trait emotion regulation or distress tolerance. AO participants with lower emotion regulation and distress tolerance abilities, however, experienced significantly more alcohol-related consequences relative to all other study participants. Thus, findings suggest that ERST participation may have served as a protective factor against alcohol-related consequences, especially for students with lower trait-level distress tolerance and emotion regulation abilities. Overall, data support the assertion that

the brief course of the current study was inadequate to produce changes at the trait level but that ERST participation resulted in skill use, which was associated with fewer alcohol-related consequences.

HYPOTHESIZED INTERVENTION MODERATORS

The third aim of the current study was to examine hypothesized moderators of ERST efficacy that were identified based on previous research findings (drinking motives, gender, readiness to change drinking) or conceptual (e.g., life satisfaction) importance to intervention outcomes.

Drinking Motives. Contrary to hypotheses, ERST participants with stronger internal drinking motives (i.e., enhancement, coping) did not demonstrate greater pre- to post-intervention reductions in heavy drinking or alcohol-related consequences. Tests of moderating effects on heavy drinking and alcohol-related consequences, however, revealed that among individuals endorsing stronger internal motives for drinking, ERST participation was associated with stability whereas AO participation was associated with significant increases over time. Consistent with the theoretical rationale of DBT skills training as an effective strategy for reducing impulsive behaviors conceptualized as maladaptive emotion regulation strategies (McMain et al., 2007, pp. 150), ERST participation did not appear to impact individuals whose drinking behaviors were primarily influenced by external factors (e.g., social/environmental). These findings suggest ERST participation potentially acted as a non-specific protective factor against

increased problematic drinking and also suggest that ERST may be particularly beneficial for students who drink to manage their emotions.

Gender. In contrast to meta-analytic findings (Carey, Scott-Sheldon, et al., 2007) and study hypotheses, there were no gender-specific effects of condition on changes in heavy drinking or alcohol-related consequences. Examinations of correlates of change, however, indicated that relative to men, women reported significantly greater increases in emotion regulation, which in turn was associated with reduced alcohol-related consequences.

It should be noted that men and women in the current sample did not differ in terms of heavy drinking or alcohol-related consequences at any time point. As the majority of previous studies have shown that male students typically drink more than female students and benefit less from intervention participation (Carey, Scott-Sheldon, et al., 2007), men recruited for the current study may differ from typical male college students. Specifically, the current study was advertised as an emotion-focused intervention, suggesting that men who are more "in touch" with their feelings may have been drawn to participate in the current study. Although more research with larger samples, including more male students, is needed, these findings as a whole cautiously suggest that DBT-informed interventions such as ERST may be equally beneficial for both male and female college students.

Readiness to Change. Consistent with previous findings (e.g., Borsari et al., 2009; Fromme & Corbin, 2004; Kaysen et al., 2009; Shaus, Sole, McCoy, Mullett, &

O'Brien, 2009) readiness to change was not affected by intervention participation, despite reductions in heavy drinking and most notably, alcohol-related consequences following ERST participation. Consequently, participants may have made changes to reduce their alcohol-related consequences *without* viewing their drinking as problematic and provide modest conceptual, if not statistical support, for the efficacy of ERST as a harm reduction intervention.

Life Satisfaction. Somewhat surprisingly, current findings revealed that life satisfaction did not moderate intervention efficacy and was not associated with heavy drinking or alcohol-related consequences at any time over the course of the study. Participants in the current study reported average to high life satisfaction (Diener, 2006), suggesting a potential ceiling effect as participants in the current study were generally satisfied with their lives. In addition, the brief course of the current study potentially hindered changes in life satisfaction as it is unlikely that participants as a whole experienced significant life changes or stressors over the course of one week.

In addition, examinations of correlations indicated that greater life satisfaction was positively associated with individual-level increases in distress tolerance, measured as decreased experiential avoidance. This finding is consistent with findings by Hayes and colleagues (2004) indicating that decreased experiential avoidance was related to increased life satisfaction. Interestingly, life satisfaction was also negatively associated with readiness to change drinking. Although speculative, this pattern of findings suggests that less experientially avoidant individuals were more satisfied with their lives and

potentially less likely to change their drinking. Unfortunately the current study was underpowered to examine more complex interrelationships between study variables and precluded more specific tests of individual differences or moderated moderation (MacKinnon, 2008).

In summary, ERST participation appeared to be unrelated to readiness to change drinking, gender, or life satisfaction, but was most beneficial for participants with internally motivated drinking. Current findings also provided partial support for moderator hypotheses. Exploratory examinations of the associations between putative intervention moderators and changes in heavy drinking and associated consequences however, revealed interesting findings that add to the literature. For example, a recent daily diary study by Kaysen and colleagues (2009) found that experiencing alcohol-related consequences separately preceded reductions in heavy drinking and increases in readiness to change drinking. Current findings indicating a positive correlation between mindfulness and alcohol-related consequences are consistent with this finding and suggest that increased awareness of consequences may represent a necessary step towards moving individuals from pre-contemplation to contemplation which in turn precedes actual changes in drinking. Specifically, ERST participation may have led participants to increase their awareness (i.e., mindfulness) of alcohol-related consequences and make small changes, including the use of existing protective strategies to reduce consequences of their drinking. Future studies recruiting larger more diverse samples including individuals with more self-reported dissatisfaction may lead to a finer-grained

understanding of how ERST impacted outcomes and for whom ERST participation may be most beneficial.

LIMITATIONS

Although the current findings are promising, there are several major limitations of the current study that suggest that results should be interpreted with caution. One limitation is that despite considerable campus-wide efforts to recruit a diverse sample, the majority of students in the current study were freshmen and sophomores enrolled in Introductory Psychology classes. Previous findings have shown that a student's age may differentially influence the impact of drinking motives on alcohol use behaviors in adolescents (Anderson, Grunwald, Bekman, Brown, & Grant, 2011) and college students (Martens et al., 2008; Read et al., 2003). Moreover, previous findings have shown that drinking behaviors become more stable and thus potentially more reliable in older students (Jessor & Jessor, 1983).

Secondly, the current study was advertised with the title "Want to Learn More about Managing your Emotions?" This decision was based on focus group participant feedback indicating that doing so would potentially reduce the stigma associated with participating in an alcohol use intervention. Encouraging anecdotal findings revealed that students were generally very interested in participating in the current study. Specifically, approximately 35% of ineligible students or students randomized to the AO condition described a sincere desire to participate in ERST and learn more about emotion regulation skills and ERST participants frequently listed learning about emotions as the

most useful aspect of the program. Although these findings provide additional support for the feasibility of ERST, they also suggest that the current sample may be biased towards students who are especially invested in learning and developing emotion regulation skills.

Also related to recruitment issues, all participants in the current study volunteered their participation. In light of time constraints inherent to this dissertation study, interested students were explicitly informed of their 50% likelihood of being randomly assigned to the ERST condition. They were also asked not to complete the screening assessment unless they were willing to complete three additional Web-based assessments and potentially attend a 3-hour group session. Prior to completing the screening assessment, potential participants were given a description of ERST content, expectations, and potential risks associated with their participation in the current study.

Notably, participants were explicitly informed that random assignment to ERST may include discomfort related to self-disclosure as part of group psychotherapy participation. There were also a number of additional research studies, including those employing survey-only, individual, and shorter protocol designs, actively recruiting Introductory Psychology students. As students had numerous choices, participants who self-selected into the current study potentially could have satisfied course requirements by volunteering for other, presumably less demanding, research projects. In addition to recruiting "atypical" male students, the current sample may also be biased towards younger students with an inherent interest in learning to regulate their emotions and more

enthusiasm for research, as evidenced by willingness to participate in a longitudinal psychotherapy study.

Several study design and statistical issues also limit the current findings. Given that both ERST and AO participants demonstrated reductions in drinking, it is impossible to rule out the possibility that assessment reactivity accounted for intervention effects. Although unexpected, this finding is consistent with previous studies showing that web-based assessment can produce reductions in alcohol use (Walters et al., 2009). Consequently, it is unclear if benefits of participation were due to intervention content or spurious factors such as assessment reactivity, increased awareness of problematic drinking patterns, or increased use of other existing protective behavioral strategies (e.g., limiting quantity of drinks consumed, using designated drivers). Nevertheless post-intervention reductions in alcohol-related consequences provide support for the efficacy of ERST as a harm reduction approach.

Time and budget limitations of the current study also made it impractical to assess how ERST participation affected heavy drinking, associated consequences, hypothesized mechanisms of change, or post-intervention skill use over extended periods of time. Thus, it is possible that ERST participants may have demonstrated greater decreases in heavy drinking and alcohol-related consequences and/or increases in adaptive emotion regulation relative to AO participants if evaluated three or six months after participation. Although collecting such data was beyond the exploratory scope of the current study, future studies including longer-term follow-up could help address these limitations and

allow evaluation of the long term effects of ERST for reducing heavy drinking and related consequences.

Preliminary analyses revealed no significant differences between individual ERST groups, yet the current small sample size and study design (i.e., AO participants completed measures individually rather than in small groups) prohibited examinations of the potential impact of participating in specific group sessions. Despite use of manualized intervention protocol including standardized group exercises, behavioral observations indicated variability in session engagement among individual ERST groups. Group dynamics are an important determinant of intervention outcomes (Maxwell et al., 2012) and a primary reason for conducting hierarchical linear modeling (McCullough, 2003; Raudenbush & Bryk, 2002).

Another limitation of the current study design is that ERST and AO were not equated on contact time or duration of participation. ERST participants completed three hours in a group discussing their drinking, associated consequences, and participating in exercises related to emotion regulation discussion and skills training, whereas AO participants only completed the measures on line. This imbalance in study design as well as the small number of ERST cohorts (N = 9) rendered it impossible to examine the impact of group participation on study findings. Therefore it remains unknown how individual ERST group-level differences (e.g., size, gender ratio, intervention team, time in semester) may have influenced post-intervention outcomes.

In addition, generalized linear mixed models were unable to model individual slopes due to a variety of factors including limited variability in outcome measure slopes which was potentially related to the brief course of the current study. It is possible that the somewhat short course of the current study was inadequate to capture true variability in drinking and alcohol-related consequences over time. Nevertheless analyses revealed significant correlations between many variables and heavy drinking and alcohol-related consequence change scores which are indicative of individual-level changes (Martens et al., 2007). Consequently, the small sample size and brief duration of the current study potentially masked important individual differences in intervention efficacy.

Finally, the current study included a large number of exploratory tests and did not adjust for potential alpha level inflation. Further, heavy drinking and alcohol-related consequences were moderately correlated with each other and typical heavy drinking was not statistically controlled in analyses examining alcohol-related consequences. The decision to use a less conservative statistical approach was made as the current study represents the first empirical examination of ERST as a new intervention for reducing heavy drinking and alcohol-related consequences. Because of this exploratory approach, it is unknown how potential Type I error rate inflation may have impacted significant findings. Future studies including a natural drinking history, post-only control group as well as measures of protective behavioral strategies (i.e., Protective Behavioral Strategies Scale; Martens, Ferrier, Sheehy, Corbett, Anderson, & Simmons, 2005) and more behaviorally-based measures of emotion regulation skills assessed prior to intervention as

well as over a longer follow-up period would potentially support the construct validity of ERST by supporting conceptually relevant mechanisms of change.

IMPLICATIONS AND FUTURE DIRECTIONS

Despite these limitations, the current study demonstrated the efficacy of ERST as a new intervention to reduce heavy drinking and associated consequences in a college student sample. In addition, using the MacArthur approach to evaluate and identify intervention moderators provided support for the importance of emotion dysregulation in heavier college student drinking. Emotion dysregulation underlies drinking for a large percentage of college students and also underlies other impulsive behaviors which undermine goal achievement. This process represents a cycle which further maintains and exacerbates drinking to manage emotions. Although unclear how, it appears that ERST participation may have served a protective function for those with lower emotion regulation and distress tolerance abilities as well as for students with a predisposition towards drinking to regulate their emotions. The current findings indicate several important implications and future directions for college student drinking intervention research.

First and consistent with previous findings (e.g., Larimer & Cronce, 2007; Carey et al., 2007), ERST was moderately efficacious for reducing heavy drinking and associated consequences, but intervention effects began to wear off after intervention participation. Future studies examining dose effects of ERST could demonstrate greater

changes in problematic college student drinking over time. For example, more sessions of ERST would allow for multiple longer-term follow-up assessments which would help clarify relations between intervention skill use, outcomes, and moderators. In addition to statistical improvement, multiple sessions would allow participants to review skill use successes and failures and to receive reinforcement and corrective feedback from facilitators regarding effective skill use. Much like with DBT, doing so would allow participants to make small behavioral changes, increase emotion regulation abilities and enact long lasting behavioral changes through trial and error.

Further, booster sessions of ERST may be beneficial towards increasing long-term efficacy. As college students represent a higher functioning population than typical individuals receiving DBT, recently developed DBT skills coaching cell phone applications (Durham DBT Inc, 2012) could provide a cost effective way of supplementing skills taught during the intervention. This strategy could function as a cost-effective way to reinforce skill use in a similar manner to phone coaching used in the comprehensive DBT protocol (Linehan, 1993a). Overall, an expanded ERST intervention could help students learn or build upon effective emotion regulation skills that are necessary to successfully navigate the college experience.

Second, tests of mediation, moderation, and between-variable correlations identified potentially promising and plausible hypotheses for future studies consistent with the primary goal of the exploratory MacArthur Framework (Kraemer et al., 2002; MacKinnon, 2008). In particular, significant correlations emerged between alcohol-

related consequences and both emotion regulation and distress tolerance change scores emerged, such that individuals who increased in emotion regulation and distress tolerance also reported decreased alcohol-related consequences. Although not statistically significant, emotion regulation and distress tolerance change differed between intervention conditions. Specifically, pre-post correlations on hypothesized mechanisms of change (MOCs) were greater in the AO group than in the ERST group, indicating greater individual-level change in the ERST group from pre- to post-treatment.

Patterns of correlations also revealed further variation across internally and externally motivated drinkers for both outcome variable and hypothesized MOC change scores. These patterns suggest the intriguing possibility that internally-motivated drinkers who were randomly assigned to ERST may have demonstrated the greatest post-intervention changes in emotion regulation and distress tolerance, which in turn resulted in greater reductions in post-intervention heavy drinking and alcohol-related consequences. Future research using larger sample sizes could further disentangle the independent and additive roles of internally-motivated drinking and emotion regulation-related constructs in post-intervention changes in heavy drinking and alcohol-related consequences.

Third, the current study highlighted the importance of adaptive emotion regulation skills for reducing problematic drinking among college students. Although unclear how ERST participation specifically impacted drinking, ERST content was designed to illustrate the impact of emotionally dysregulated behaviors across multiple

domains. Intervention leaders specifically highlighted the applicability of skills towards reducing the risks associated with drinking, but examples used in session were presented as strategies for reducing the risks associated with engaging in any impulsive behavior. Current findings indicate that ERST may have indirectly impacted alcohol-related consequences in a number of ways including reducing emotional vulnerability to impulsive decision making (e.g., improved self-care, considering the pros and cons of actions) and reducing other impulsive behaviors (e.g., risky sexual behaviors, binge eating) that are likely to increase distress and drinking to manage emotional states. Consequently it is unknown if participants used skills to reduce impulsive behaviors unrelated to drinking, which in turn lowered susceptibility to emotionally dysregulated drinking and associated consequences. Future studies using daily monitoring could further elucidate the finer-grained effects of skill use on daily drinking, associated consequences, and other non-alcohol related domains. In addition, assessing pre-intervention behavioral skill use could help provide a better understanding the specific effects of ERST.

Unfortunately, there is a paucity of empirically validated measures designed to tap into the interconnected and complex process of emotion regulation. Current findings, however, represent the first study to provide initial validation for the DBT diary card as a behavioral measure of emotion regulation as internal reliability was acceptable for each skill set. Further investigation, as well as revisions to wording of certain skills (e.g., PLEASE MASTER, Wise Mind) to assess skill use in students not familiar with DBT

terminology could help support the diary card's use as a valid outcome measure.

Finally, the current findings, in conjunction with previous findings demonstrating that Motivational Interviewing/Personalized Normative Feedback (MI/PNF) based interventions are most effective for socially motivated drinkers (Carey et al., 2006, 2007; 2007; Neighbors et al., 2004; Walters & Neighbors, 2005) have important implications. First, this finding supports the conclusions of Patrick and colleagues (2011) that participants should be screened and matched to appropriate interventions based on their reasons for drinking. For example, MI/PNF-based interventions have demonstrated specific efficacy by showing that correcting normative drinking estimates is partially responsible for intervention success. Although overestimated drinking norms may provide justification or pressure to drink heavily it does not address underlying reasons that motivate the decision to drink in the first place. Students whose drinking is internally motivated experience difficulties tolerating their emotions without drinking, suggesting that peer group drinking behaviors may be irrelevant to their choice to drink. Students who drink to manage their emotions are therefore more likely to benefit from interventions like ERST that focus on emotional, rather than social, risk factors for drinking. Future studies directly comparing ERST to MI/PNF-based interventions and include moderation analyses based on drinking motives could provide support for matching students to interventions based on the most influential reasons why they drink.

Secondly, findings demonstrating that ERST was least effective for externally-motivated drinking were not surprising given that ERST omitted interpersonal

effectiveness skills (IPES). This decision was based on the conceptualization of heavy drinking as a maladaptive emotion regulation strategy as well as previous studies using abbreviated DBT skills training (i.e., Mindfulness, Emotion Regulation, Distress Tolerance skills) to reduce impulsive behaviors (e.g., Telch et al, 2001; Schultz-Fisher, 2007). The comprehensive DBT skills training program, however, includes IPES based on the rationale that interpersonal difficulties significantly impact emotion dysregulation (e.g., break up of a romantic relationship, difficulties with assertiveness, refusing demands).

In addition to expanding ERST to include multiple sessions, adding skills from the interpersonal effectiveness module may increase efficacy within internally motivated drinkers while also expanding applicability of session content to externally motivated drinkers. Specifically, externally motivated drinkers could use mindfulness skills in a similar manner as MI/PNF to increase both awareness and motivation to change problematic drinking patterns. Using interpersonal effectiveness skills could then provide externally-motivated drinkers with additional tools necessary for resisting social pressure and defying inflated normative estimates of typical college student drinking.

Consistent with previous research (e.g., Cooper, 1994; Kuntsche et al., 2008), drinking motives in the current study were highly correlated with each other, indicating that participants drink in response to both internal and external motivations. These findings suggest that including interpersonal effectiveness skills during ERST could provide students with a variety of skills that all students, regardless of drinking

motivations, could use to reduce the risks of heavy drinking based on situational and contextual factors associated with specific drinking episodes. This approach could be similar to the Lifestyle Management Class (LMC; Fromme & Orrick, 2004) which included skills for managing life and college-specific stress and was effective for reducing drinking among mandated and voluntary participants (Corbin & Fromme, 2004).

In conclusion, the current study demonstrated that ERST represents a potentially efficacious intervention pending replication according to APA guidelines (Chambless & Hollon, 1998). Current findings also provide initial support for the feasibility and efficacy of ERST as a harm reduction approach towards reducing heavy drinking and alcohol-related consequences. In addition, the current study demonstrated the importance of emotion dysregulation on problematic drinking, but should be considered preliminary. Future research improving on the limitations of the current study may establish the efficacy of ERST while also providing a better understanding of how the intervention produced effects.

Given the broader applicability of emotion regulation skills, ERST represents a change in the overall conceptualization of college student drinking interventions. This conceptualization is more in-line with more comprehensive, holistic approaches to addictions treatment, including the larger scale protocols used in Motivational Interviewing/Personalized Normative Feedback (MI/PNF; Velasquez et. al. 2008) or Cognitive-Behavior Therapy (CBT; Monti et al., 2008) treatments for alcohol use

disorders. The disappointing findings associated with more than a decade of intervention research suggest that expanded and more comprehensive intervention and prevention efforts may be necessary to effectively address the alarming dangers associated with college student drinking. Doing so may provide new and more efficacious intervention strategies to better address the lingering problems associated with heavy college student drinking.

APPENDIX A: DATA SAFETY MONITORING PLAN

Participant Data Safety Monitoring Plan. A data safety monitoring plan (DSMP) helped assure participant safety and well-being by carefully monitoring drinking, alcohol-related consequences, and symptoms of alcohol dependence were monitored over the course of the study. No statistically significant increases in drinking or associated consequences were observed, but 22 (8.2%) individuals reporting an Alcohol Use Disorders Identification Test (AUDIT) score of 15 or higher were excluded from further study participation. The principal investigator contacted these individuals to discuss the potential risks of their drinking and to encourage them to seek help. In addition, all individuals who contacted the study were given a list of campus and community agencies that provide free or low cost general and substance abuse counseling services.

APPENDIX B: STUDY MEASURES/INTERVENTION PROTOCOL

STUDY DESCRIPTION FOR POTENTIAL PARTICIPANTS

The College Emotions and Health study is being conducted by a laboratory at the University of Texas at Austin. We are recruiting approximately 80 UT students to complete three web-based surveys about alcohol use, alcohol-related consequences, and how they manage their emotions. If you are eligible and willing to participate, we'll ask you to fill out two surveys that will take about 45 minutes of your time and a brief final survey that will take about 15 minutes of your time. **You will earn 2 hours of Psychology 301 course credit for completing the three surveys. If you are not enrolled in the Psychology 301 class, you will be paid $5 for each hour of study involvement. Specifically, you will be paid $5 for the completing the baseline survey and $5 for completing the 1 week follow up survey. You will not be paid for completing the brief final survey, but you will be entered into a drawing to win a Playstation 3 for completing all three web-based surveys (total $15).**

Half of study participants (N =40) will also be asked to participate in a 3 hour group intervention session with 5-7 other UT students. Group leaders will teach skills for managing feelings; and participants will be asked to complete a 13-item evaluation of the session and topics and group leader performances.

The group session will be audio taped for quality control purposes. You will eligible to earn an additional 3 hours of Psychology 301 course credit if randomly

selected for participating in the group intervention session. If you are not enrolled in Psychology 301, you will be paid $15 for your time.

If you have any questions, please feel to call the College Health and Emotions Study (512-471-7385 or email hbrister@mail.utexas.edu.

Screening Measures.

DEMOGRAPHICS

Please provide us with some basic information about you below:

1. What is current height and weight?

Height:_____feet _____inches Weight:_____pounds.

2. What is your biological sex?

a. Female b. Male

3. What is your date of birth? __ __ / __ __ / __ __ __ __

4. What is your race/ethnicity (mark all that apply):

a. American Indian/Alaskan Native
b. Asian
c. Black or African American
d. Hispanic or Latino(a)
e. Native Hawaiian or Other Pacific Islander
f. White or Caucasian

5a. (Males only) During the **past month**, how many times did you drink 5 or more drinks at a sitting?

_____ times

5b. (Females only) During the **past month**, how many times did you drink 5 or more drinks at a sitting?

_____ times

Alcohol Use Disorders Identification Test (AUDIT; **Saunders et al., 1986. Also administered during Pre-Test, Post-Test, and 1-Month follow up assessments)**

Please circle the answer that is correct for you.

1. How often do you have a drink containing alcohol?

Never Monthly or less 2 — 4 times a month 2 — 3 times a week

4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?

1 — 2 3 — 4 5 — 6 7 — 9 10 or more

3. How often do you have six or more drinks on one occasion?

Never Less than monthly Monthly Weekly Daily or almost daily

4. How often during the last year have you found that you were not able to stop drinking once you had started?

Never Less than monthly Monthly Weekly Daily or almost daily

5. How often during the last year have you failed to do what was normally expected from you because of drinking?

Never Less than monthly Monthly Weekly Daily or almost daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

Never Less than monthly Monthly Weekly Daily or almost daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?

Never Less than monthly Monthly Weekly Daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

Never Less than monthly Monthly Weekly Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?

No Yes, but not in the last year Yes, during the last year

10. Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?

No Yes, but not in the last year Yes, during the last year

Outcome Measures

Daily Drinking Questionnaire (DDQ; Collins et al., 1986)

The following questions ask about your alcohol consumption. When responding, please consider the following: **One STANDARD DRINK is equivalent to 12 ounces of beer, one shot of liquor (straight or in a mixed drink), or five ounces of wine.** Think about your alcohol consumption during the **past week**. Please indicate the number of alcoholic drinks you consumed each day. Please circle your answer.

Monday	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Tuesday	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Wednesday	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Thursday	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Friday	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Saturday	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
Sunday	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+

1a. (Males Only): During the **past week**, how many times did you have five or more drinks at a sitting?

_____ times

1b. (Females Only): During the **past week**, how many times did you have four or more drinks at a sitting?

_____ times

2. During the **past week**, how many times did you get drunk (not just a little high) on alcohol? _____ times

Alcohol-Related Problems (RAPI; White & Labouvie, 1989)

During the **past week**, how many times did the following things happen to you while you were drinking alcohol or because of your alcohol use?

1.	Not able to do your homework or study for a test.	0	1 -2	3-5	6-10	>10
2.	Got into fights, acted badly, or did mean things.	0	1 - 2	3-5	6-10	>10
3.	Missed out in other things because you spent too much money on alcohol.	0	1 - 2	3-5	6-10	>10
4.	Went to work or school high or drunk.	0	1 - 2	3-5	6-10	>10
5.	Caused shame or embarrassment to someone.	0	1 - 2	3-5	6-10	>10
6.	Neglected your responsibilities.	0	1 - 2	3-5	6-10	>10
7.	Relatives avoided you.	0	1 - 2	3-5	6-10	>10
8.	Felt that you needed more alcohol than you used to use in order to get the same effect.	0	1 - 2	3-5	6-10	>10
9.	Tried to control your drinking by trying to drink only at certain times of the day or in certain places.	0	1 - 2	3-5	6-10	>10
10.	Had withdrawal symptoms (i.e. felt sick because you stopped or cut down on drinking).	0	1 - 2	3-5	6-10	>10
11.	Noticed a change in your personality.	0	1 - 2	3-5	6-10	>10
12.	Felt that you had a problem with alcohol.	0	1 - 2	3-5	6-10	>10
13.	Missed a day (or part of a day) of school or work.	0	1 - 2	3-5	6-10	>10
14.	Tried to cut down or quit drinking.	0	1 - 2	3-5	6-10	>10
15.	Suddenly found yourself in a place that you could not remember getting to.	0	1 - 2	3-5	6-10	>10
16.	Passed out or fainted suddenly.	0	1 - 2	3-5	6-10	>10
17.	Had a fight, argument, or bad feelings with a friend.	0	1 - 2	3-5	6-10	>10
18.	Had a fight, argument, or bad feelings with a family member.	0	1 - 2	3-5	6-10	>10
19.	Kept drinking when you promised yourself not to.	0	1 - 2	3-5	6-10	>10
20.	Felt you were going crazy.	0	1 - 2	3-5	6-10	>10
21.	Had a bad time.	0	1 - 2	3-5	6-10	>10
22.	Felt physically or physiologically dependent on alcohol.	0	1 - 2	3-5	6-10	>10
23.	Was told by a friend or neighbor to stop or cut down drinking.	0	1 - 2	3-5	6-10	>10

Pre- and Post-Test Measures

Drinking Motives (DMM-R; Cooper, 1994)

*Below is a list of reasons people sometimes give for **drinking alcohol**. Thinking of all the times you **drink**, how often would you say that you **drink** for each of the following reasons?*

	Almost Never /Never	Some of the Time	Half of the Time	Most of the Time	Almost Always/ Always
01. To forget your worries	1	2	3	4	5
02. Because your friends pressure you to drink	1	2	3	4	5
03. Because it helps you enjoy a party	1	2	3	4	5
04.Because it helps you when you feel depressed or nervous	1	2	3	4	5
05. To be sociable	1	2	3	4	5
06. To cheer you up when you are in a bad mood	1	2	3	4	5
07.Because you like the feeling	1	2	3	4	5
08.So that others won't kid you about ***not*** drinking	1	2	3	4	5
09.Because it is exciting	1	2	3	4	5
10. To get high	1	2	3	4	5
11. Because it makes social gatherings more fun	1	2	3	4	5
12. To fit in with a group you like	1	2	3	4	5
13. Because it gives you a pleasant feeling	1	2	3	4	5
14. Because it improves parties and celebrations	1	2	3	4	5
15. Because you feel more self-confident and sure of yourself	1	2	3	4	5
16. To celebrate special occasions with friends	1	2	3	4	5
17.To forget about your problems	1	2	3	4	5
18. Because it's fun	1	2	3	4	5
19. To be liked	1	2	3	4	5
20.So you won't feel left out	1	2	3	4	5

Acceptance and Action Questionnaire (AAQ; Hayes et. al., 2004)

Below you will find a list of statements. Please rate the truth of each statement as it applies to you. Use the following scale to make your choice.

	Never True	Very Rarely True	Seldom True	Sometimes True	Frequently True	Almost Always True	Always True
01.I am able to take action on a problem even if I am uncertain what is the right thing to do.	1	2	3	4	5	6	7
02.I often catch myself daydreaming about things I've done and what I would do differently next time.	1	2	3	4	5	6	7
03.When I feel depressed or anxious, I am unable to take care of my responsibilities	1	2	3	4	5	6	7
04.I rarely worry about getting my anxieties, worries, and feelings under control.	1	2	3	4	5	6	7
05.I'm not afraid of my feelings.	1	2	3	4	5	6	7
06.When I evaluate something negatively, I usually that this is just a reaction, not an objective fact.	1	2	3	4	5	6	7
07.When I compare myself to other people, it seems that most of them are handling their lives better than I do.	1	2	3	4	5	6	7
08.Anxiety is bad.	1	2	3	4	5	6	7
09.If I could magically remove all the painful experiences I've had in my life, I would do so.	1	2	3	4	5	6	7

Mindfulness Attention and Awareness Scale (MAAS; Brown & Ryan, 2003)						
INSTRUCTIONS: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be.						
	Almost always	**Very Frequently**	**Somewhat Frequently**	**Somewhat Infrequently**	**Very Infrequently**	**Almost Never**
01. I could be experiencing some emotion and not be conscious of it until some time later.	1	2	3	4	5	6
02. I break or spill things because of carelessness, not paying attention, or thinking of something else.	1	2	3	4	5	6
03. I find it difficult to stay focused on what's happening in the present.	1	2	3	4	5	6
04. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	1	2	3	4	5	6
05. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	1	2	3	4	5	6
06. I forget a person's name almost as soon as I've been told it for the first time.	1	2	3	4	5	6
07. It seems I am "running on automatic" without much awareness of what I'm doing.	1	2	3	4	5	6
08. I rush through activities without being really attentive to them.	1	2	3	4	5	6
09. I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there.	1	2	3	4	5	6
10. I do jobs or tasks automatically, without being aware of what I'm doing.	1	2	3	4	5	6
11. I find myself listening to someone with one ear, and doing something else at the same time.	1	2	3	4	5	6
12. I drive places on "automatic pilot" and then wonder why I went there.	1	2	3	4	5	6
13. I find myself preoccupied with the future or the past.	1	2	3	4	5	6
14. I find myself doing things without paying attention.	1	2	3	4	5	6
15. I snack without being aware that I'm eating.	1	2	3	4	5	6

Readiness Ruler (Heather, Smailes, & Cassidy, 2008) Using the ruler below, please indicate the best description of how you feel *right now*.				
Never think about drinking less	Sometimes I think about drinking less	I have decided to drink less	I am already trying to cut back on my drinking	My drinking has changed, I now drink less than before
0	1	2	3	4

The Negative Mood Regulation Scale (NMR; Catanzaro & Mearns, 1990)

This is a questionnaire about what people believe they can do about unpleasant emotions or feelings such as sadness, anger, or boredom.

Please answer the statements by giving as true a picture of your own beliefs about as possible. There are no right or wrong answers. Remember, the questionnaire is about what you believe you can do, not about what you actually or usually do. Be sure to read each item carefully and show your beliefs by circling the appropriate number.

	Strongly Disagree	**Mildly Disagree**	**Agree and Disagree Equally**	**Mildly Agree**	**Strongly Agree**
01. I can usually find a way to cheer myself up.	1	2	3	4	5
02. I can do something to feel better.	1	2	3	4	5
03. Wallowing in it is all I can do.	1	2	3	4	5
04. I'll feel okay if I think about more pleasant times.	1	2	3	4	5
05. Being with other people will be a drag.	1	2	3	4	5
06. I can feel better by treating myself to something I like.	1	2	3	4	5
07. I'll feel better when I understand why I feel bad.	1	2	3	4	5
08. I won't be able to get myself to do anything about it.	1	2	3	4	5
09. I won't feel much better by trying to find some good in the situation.	1	2	3	4	5
10. It won't be long before I can calm myself down.	1	2	3	4	5
11. It will be hard to find someone who really understands.	1	2	3	4	5
12. Telling myself it will pass will help me calm down.	1	2	3	4	5
13. Doing something nice for someone else will cheer me up.	1	2	3	4	5
14. I'll end up feeling really depressed.	1	2	3	4	5

Negative Mood Regulation Scale Continued

15. Planning how I'll deal with things will help.	1	2	3	4	5
16. I can forget about what's upsetting me pretty easily.	1	2	3	4	5
17. Catching up with my work will help me calm down.	1	2	3	4	5
18. The advice friends give me won't help me feel better.	1	2	3	4	5
19. I won't be able to enjoy the things I usually enjoy.	1	2	3	4	5
20. I can find a way to relax.	1	2	3	4	5
21. Trying to work the problem out in my head will only make it seem worse.	1	2	3	4	5
22. Seeing a movie won't help me feel better.	1	2	3	4	5
23. Going out to dinner with friends will help.	1	2	3	4	5
24. I'll be upset for a long time.	1	2	3	4	5
25. I won't be able to put it out of my mind.	1	2	3	4	5
26. I can feel better by doing something creative.	1	2	3	4	5
27. I'll start to feel really down about myself.	1	2	3	4	5
28. Thinking that things will eventually be better won't help me feel any better.	1	2	3	4	5
29. I can find some humor in the situation and feel better.	1	2	3	4	5
30. If I'm with a group of people, I'll feel "alone in a crowd."	1	2	3	4	5

The Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985)

DIRECTIONS: Below are five statements with which you may agree or disagree Using the 1- 7 scale below, indicate your agreement with each item by placing the appropriate number in the line preceding that item. Please be open and honest in your responding.

	Strongly Disagree	**Disagree**	**Slightly Disagree**	**Neither Agree or Disagree**	**Slightly Agree**	**Agree**	**Strongly Agree**
1.In most ways my life is close to my ideal.	1	2	3	4	5	6	7
2.The conditions of my life are excellent.	1	2	3	4	5	6	7
3. I am satisfied with life.	1	2	3	4	5	6	7
4.So far I have gotten the important things I want in life.	1	2	3	4	5	6	7
5. If I could live my life over, I would change almost nothing.	1	2	3	4	5	6	7

Measures Exclusive to Participants Randomly Assigned to the ERST Condition

SESSION DESCRIPTION

You have been randomly selected to attend in a **3** hour group intervention session. If would like to attend the group intervention, the next step will be to schedule you to come to the laboratory (SEAY Room 3.320D) in the **next 7 days**. The group will consist of 6-8 UT students. Group leaders will lead interactive discussion and group exercises designed to teach skills for managing feelings. You will have the opportunity to provide informed consent for the group intervention at the beginning of the session.

The group intervention session will be audio taped and only first names (or false first names) will be recorded. You will earn 3 hours of Psychology 301 course credit for completing the group intervention. If you are not enrolled in Psychology 301, you will be paid $15 for your time. Snacks and free pizza will be provided during the session. Please indicate the most convenient days and times for you to come to the lab from the options listed below. We will try to schedule the session at the most convenient date and time for you. If you have any questions, please feel to call the College Health and Emotions Study (512-471-7385 or email hbrister@mail.utexas.edu.

Indicate your preference from1 = most convenient to 5 = least convenient:

_____ Date/Time 1 _____ Date/Time 2

_____ Date/Time 3 _____ Date/Time 4

_____ Date/Time 5

Skills Use Diary Card

		How many times during the **PAST TWO WEEKS** did you use the following skills to resist drinking during emotionally difficult situations (e.g., when feeling frustrated, bored, sad, angry, etc.)					**How much do think this skil you resist drinking?***
Skills		**Never/ Almost Never**	**Some of the Time**	**Half the Time**	**Most of the Time**	**Almost Always**	
Core Mindfulness Skills	1. Wise mind	1	2	3	4	5	
	2. Observe: just notice your experience	1	2	3	4	5	
	3. Describe: put your experience into words	1	2	3	4	5	
	4. Participate: fully enter your experience without self-consciousness	1	2	3	4	5	
	5. Nonjudgmental stance	1	2	3	4	5	
	6. One-mindfully: in-the-moment	1	2	3	4	5	
Emotion Regulation	7. Reduce emotional vulnerability: PLEASE skills	1	2	3	4	5	
	8. Non-judgmental mindfulness of current emotions	1	2	3	4	5	
	9. Be mindful of positive experiences	1	2	3	4	5	
	10. Be UNmindful of worries	1	2	3	4	5	
	11. Build MASTERY: do one activity that makes you feel competent and in control	1	2	3	4	5	
	12. Build positive experiences that do not involve substance use	1	2	3	4	5	
	13. Opposite-to-emotion action	1	2	3	4	5	
Distress Tolerance	14. Distract: wise mind ACCEPTS	1	2	3	4	5	
	15. Self-soothe through your 5 senses	1	2	3	4	5	
	16. Improve the moment: IMPROVE skills	1	2	3	4	5	
	17. Pros and cons of tolerating distress	1	2	3	4	5	
	18. Half Smiling	1	2	3	4	5	

*** Usefulness of Skills
1 = Not Used/Not Helpful
2 = Somewhat Helpful 3 = Moderately Helpful
4 = Very Helpful 5 = Extremely Helpful

PROTOCOL ADHERENCE RATINGS

DATE Audio Tape Reviewed: _____

Protocol Adherence Ratings

For each item, assess the therapist on a scale of 0-6, using the following criteria:

0	1	2	3	4	5	6
Poor	**Barely Adequate**	**Mediocre**	**Satisfactory**	**Good**	**Very Good**	**Excellent**

Introduction

___ How well did the group leaders explain the rationale for learning new emotion regulation skills?

Setting and Following an Agenda

___ How well did the group leaders set a clear agenda?

___ How well did the group leaders follow and adhere to the agenda?

___ How well did the group leaders make use of the allotted time to address the target problem(s)?

Skill Training Modules

___ How well did the group leaders present and review skill-based materials for **Core Mindfulness** skills?

___ How well did the group leaders present and review skill-based materials for **Distress Tolerance** skills?

___ How well did the group leaders present and review skill-based materials for **Emotion Regulation** skills?

Overall

___ How well did the group leaders balance didactic and exercises?

___ How well did group leaders incorporate specific group member situations into explanations of how emotion regulation skills training could help?

To be completed by Intervention Team

_____/_____/_20_____/_____Session Date/Time _____

_____ :Number of Participants

_HAB/_____ :Interventionist/Undergraduate Research Assistant Initials

Participant Program Satisfaction.

Please help us evaluate our program by answering some questions about the program you just completed. We are interested in your <u>honest</u> opinion, whether it is positive or negative. <u>Please answer ALL of the questions.</u> Thank you very much for being here and your helpful feedback.

		strongly disagree	**disagree**	**uncertain**	**agree**	**strongly agree**
01.	The program content seemed well organized.	1	2	3	4	5
02.	The facilitators seemed well organized.	1	2	3	4	5
03.	After the program, I feel more confident that I can manage my emotions without drinking.	1	2	3	4	5
04.	The topics discussed during the program seem relevant to reasons why I drink alcohol.	1	2	3	4	5
05.	The facilitators seemed warm and caring.	1	2	3	4	5
06.	I will use the skills that I learned in the program when I feel the urge to drink to cope with my emotions.	1	2	3	4	5
07.	The facilitators seemed well trained and competent to teach the program skills.	1	2	3	4	5
08.	I would recommend this program to a friend who would like to change his/her drinking.	1	2	3	4	5
09.	I would recommend this program to a friend who would like to learn how to manage his/her emotions better.	1	2	3	4	5
10.	The facilitators presented information in non-judgmentally.	1	2	3	4	5
11.	The facilitators did NOT seem like they judged me based on how much I drink or problems that my drinking has caused me in the past.	1	2	3	4	5
12.	Please list the aspects of the program that you feel were ***most*** useful					
13.	Please list the aspects of the program that you feel were ***least*** useful					

Materials:

Power Point presentation of group session topics

Copies of session handouts for participants (to be given at the end of session)

Chocolate, raisins, and orange slices for brief mindfulness exercise.

Name tags

I. Informed Consent and Ground Rules

A. Informed Consent

-Intervention teams will emphasize consent form main points (discontinue participation at any time, audio taping of session, OK to use false first name)

-Participants read and sign Intervention Consent Form after asking questions.

B. Ground Rules

- Intervention leaders hand out name tags and remind group members of the importance of protecting the privacy of all group members by using only first names, not discussing identities of other group members outside of the session, and not revealing identifying information (age, ethnicity) during the session.

- Respect for group leaders and members (no cross-talk/attacks, minimize advice giving)

II. Introduction/Rationale for ERST Intervention (20 minutes).

A. Emotions

a. Define

b. Briefly discuss adaptive functions

Emphasize

- We have little control over what emotions arise (Primary emotions)
- Problems typically arise because of secondary emotions (i.e., emotions ABOUT emotions. Examples: feeling guilty about sad or angry.

c. Powerful influence of emotions on thoughts, behaviors, etc.

- Sequence of emotions (situation → thought → emotion→ action)
- Provide personal example of emotional sequelae
    - Emphasize vicious cycle
    - Solicit group examples

B. Emotion Regulation

a. Define

b. Rationale (need to manage emotions to succeed in college)

- Emphasize management VS. consequences of suppressing emotions

C. **Rationale for ERST (provided to reduce potential stigma of participation):**

a. Impulsive behaviors represent maladaptive emotion regulation strategies.

b. College is associated with heavy drinking and can be considered a normal part of the college experience, many people including college students drink to reduce negative emotions (i.e., anxiety, sadness, anger) and to increase positive emotions (i.e., excitement).

c. **alcohol can reduce stress but so can exercise, laughter, doodling, listening to music, etc.; alcohol reduce boredom but so can calling a friend, going to a movie, typing out class notes, etc.)**

d. **Reasons for Drinking (use white board—use examples throughout session)**

-NOTE: Co-Leader be sure to provide examples of drinking to manage both positive ad negative examples if not provided by participants.

e. Healthy/Wise Mind drinking is the goal.

f. Everyone can benefit from learning new/refining existing emotion regulation skills.

B. Intervention Overview (5 Minutes)

a. Didactic nature of session; participants will be given a copy of all handouts discussed during the session at the end of the session

- Emphasize need for practice
- Encourage review of session materials (handout binder like textbook)

C. Session Agenda and Goal(s) of ERST to learn and refine skills in order to:

a) recognize and label emotions

1) understand what you are feeling.
"I'm O.K:" = happy, bored, irritated, sad????

2) understand how you usually act when you feel this way
Do you party too much happy or bored?
Do you pick fights when irritated, bored, sad?

b) manage strong emotions that can lead to heavy drinking and potential consequences (i.e., failing to study for a test, driving after drinking)

c) tolerate unpleasant emotions when the situation cannot be changed

d) "live in the moment," most suffering is caused by thinking of the past (i.e., beating self up for mistakes) or worrying about the future (i.e., what will I do after college).

e) Goal is NOT trying to block/suppress emotions

- We can't stop emotions
- Paradoxical effects of suppression

(e.g. trying not to laugh makes you want to laugh more)

D. Skills Overview

Emphasize: Skills work together to facilitate adaptive emotion regulation. Start with mindfulness: need to know/consider details of situation to choose acceptance or change skills.

E. DBT Perspective: Three States of Mind

Discuss Mindfulness Handout 1: "Taking Hold of Your Mind"

a) Rational Mind: way of thinking that is using only intelligence and logic to make decisions

b). Emotion Mind: way of thinking where logical thinking is very difficult when strong emotions have "hijacked" the mind)

c). Some people spend too much time in rational mind other spend too much time in emotion mind.

1) Discuss consequences of too much emotion mind

- impulsive, emotion-driven actions)

2) Consequences of too much rational mind

- unable to express or understand feelings
- Not effective for making decisions that need emotion, (e.g., should I go on a date with person X or person Y?

3) Both Emotion and Rational Mind Beneficial

- Emotion Mind alert us to problem
- Rational Mind helps us solve problems (planning)

d) Wise Mind: balance (integration) between emotion and rational mind

Emphasize:

- wise mind allows people to choose which thoughts feelings and feelings they focus their present moment attention on (we often experience many thoughts and feelings within a short period of time)

e) Confusing Emotion Mind with Wise Mind

-use Distress Tolerance skills (discussed later) to delay action.

f**) Brief interactive "Wise Mind" Activity: Choosing to go downtown to drink**

Demonstrate emotion/rational mind important for decision.

II. Core Mindfulness Skills (20 minutes)

A. **Rationale:** Sharpening (Increase full picture focus)/Softening (Reduce perfectionism) attention.

- Vehicles for achieving wise mind (balancing emotion/rational mind).
- Too much rational OR emotional bad
- **Show Video clip illustrating this.**
- People may know which mind state they are in most often (Emotion, Rational, Wise Mind).
- Mindfulness skills can help increase awareness of current mind state for those who do not.
- **What Mindfulness Skills Are and Are NOT (necessarily religious/meditation)**

B. Facilitating Wise Mind

a. "What" Skills: observation and description of behaviors and emotions.

1. Intervention leaders Discuss Mindfulness Handout 2: "Taking Hold of Your Mind: "What" Skills.

a. Observe

b. Describe

- Brief group exercise: Observe/Describe sitting in chair

c. Participation: full participation in the moment without self-consciousness

- Observe/Describe first steps to learning ANY new skill (e.g., Learning to play Piano)
- Wise Mind 2.0 (skip observe/describe: automatically act in ways that balance logic and intuition)

Example: Did Vince Young over think or hesitate when running for the game winning score on 4th down in 2005 National Championship game?)

b. "How" Skills: How to use "What" Skills: non-judgmentally, one thing at a time, focus on what works.

1. Discuss Mindfulness Handout 3: “Taking Hold of Your Mind: “How” Skills.

- permission to have thoughts: judging thoughts and feelings does not make them go away.
- observing judgmental thoughts allows people to set them aside or replace them with non-judgmental thoughts (“I don’t need to judge myself,” “just the facts: “I did poorly on a test” not “I am an idiot”)
- Judgmental thoughts cannot be changed without awareness of thoughts

C. Interactive group activity: mindful eating

-Pass out chocolate, raisins, and orange slices

-Intervention leader reads “Two Bites Mindfulness Meditation” script (2 minutes)

- solicit participant reactions to exercise (3 minutes)

- Intervention leaders highlight the normality of losing focus, unrelated thoughts, and judgments.

Emphasize

- Mindfulness skills like riding a bike: mastered through experience NOT discussion.
- Practice often especially when emotions are not strong. This helps to use the skills during highly emotional states when people are likely to act impulsively.

III. Emotion Regulation Skills (40 minutes)

A. Define

B. Rationale: Uncomfortable emotions are often viewed as problems to be solved, but feelings are useful (adaptive) and allow us to act in situations.

a. Intervention leaders discuss Emotion Regulation Handout 5: “What Good are Emotions?” (Expanded from Introduction to function of emotions)

- Emotions communicate our needs and influence the actions of others through non-verbal cues (facial expressions, posture)
- Emotions motivate action (fear = escape situation; guilt = rectify mistakes) or inaction (shame = inhibit actions such as yelling obscenities at your 90 year old grandmother when she drives 20 MPH under the speed limit)

b. Intervention leaders discuss Emotion Regulation Handout 3: "Model for Describing Emotions"

- Show Betty White Snickers Commercial Clip
- Emphasize:
    - Research: Naming emotion reduces its impact
    - mindful (non-judgmental) observation, description, and experiencing
    - take home handouts include concrete steps to practice this
    -observation of physical changes associated with emotions, action/inaction urges
    - influence of thoughts and interpretations of event on emotions ("this party is going to suck" vs. "this party might be fun"; same event, very different emotions; NEED a drink vs. WANT a drink)

c. Interactive Discussion: Emotion Regulation Handout 4: "Ways to Describe Emotions: ANGER"

- Show video clip ("Office Space:" paper jam)
- Intervention leaders facilitate brief group discussion of the Describing Anger Worksheet (present each section as questions, allow 2 -3 group responses)
    - What are other words to describe INTENSITY of anger?
        Re-emphasize: naming emotions reduces impact
    - What types of events lead to feelings of anger?
    - What physical sensations are associated with anger?

- Emphasize that take home handouts include
  In-session "Describing Emotion" Handouts

10 Minute Break/Pizza Delivery

IV. Emotion Regulation Skills (Continued)

d. Continue: Interactive Discussion: Emotion Regulation Handout 4: "Ways to Describe Emotions: JOY"

- Intervention leaders facilitate brief group discussion of the Describing Joy Worksheet (present each section as questions, allow 2 -3 group responses)
  - What are other words to describe joy?
  - What types of events lead to feelings of joy?
  - What physical sensations are associated with joy?
- Intervention leaders emphasize that take home handouts include worksheets for other feelings (love, shame, sadness, etc.)

e. Discuss ABBREVIATED Emotion Regulation Handout 6: "Reducing Vulnerability to Emotion Mind" **(**"Bad Day Vaccines" in Power Point)

- Show "PLEASE Master" acronym
- Emphasize more information included in Handout Binder

f. Intervention leaders discuss Emotion Regulation Handout 7: "Steps for Increasing Positive Emotions" **(SHORT-TERM)**

- Emphasize that eliminating negative emotions is impossible, detrimental (e.g., no guilt or shame = no inhibition of behaviors that we later regret, no anger = never standing up for yourselves), and not the goal of increasing positive emotions.

g. Intervention leaders discuss Emotion Regulation Handout 8: "Adult Pleasant Events Schedule"

-Solicit group member pleasant events and how they change/maintain emotions

- Show abbreviated handout to emphasize endless number of enjoyable activities,

- Emphasize that any personally enjoyable activity is beneficial even if it is not on the list (obligations such as typing out class notes, reading *War and Peace* do not count unless they are personally fun)

-increasing pleasant activities that do not involve avoidance behaviors (e.g., drinking, shopping, over eating/working) increases wise mind and teaches our brains that we can manage strong feelings without avoidance

h. Intervention leaders discuss Emotion Regulation Handout 7: "Steps for Increasing Positive Emotions" **(LONG-TERM)**

-Emphasize: Accumulate Positives

- Although may seem intuitive, practicing focusing on positive feelings increases positive emotions (imagining the happiest most relaxing day of your life leads to feelings of happiness and relaxation even if today is (seems like) the worst day of your life).

i. Intervention leaders discuss Emotion Regulation Handout 10: **"**Changing Emotions by Opposite Action"

- Remind participants that emotions motivate action/inaction

- Acting (or not acting) in a completely opposite way (e.g., "Fake it until you make it") tricks the brain into changing emotions (impossible to feel sad if 100% of your attention is focused on a hilarious movie)

- Plutchik's Emotion Wheel: 4 Pairs of Opposite Emotions

- Neuroimaging research has shown that taking opposite action (even if it is forced) leads to actual changes in brain activation ("Fake it long enough and it becomes real")

-Emphasize: First need to apply Mindfulness so you can decide best OPPOSITE ACTION to take.

- Briefly discuss Opposite Action AND Supporting Research for:

Fear

Guilt/Shame

Sadness/Depression

Anger

V. Distress Tolerance Skills (20 minutes)

Emphasize: Distress Tolerance skills are:

- Extension of Effectiveness Skills (Do what works, not what feels right--Mindfulness)
- Band Aid (Use sparingly)

1. Use when situations can't be changed (e.g., studying for the GRE, going to class during finals week after a bad break up)

2. Use when too stressed/overwhelmed to manage current situation (e.g., computer crashed, sick, fighting w/roommate)

A. **Rationale:** Distraction/Avoidance not always maladaptive emotion regulation strategy.

- Pain part of life, inability to tolerate greatly increases risk for impulsive behaviors
- Adaptive skills for tolerating strong emotions without making things worse

- Solicit group member examples of times drinking made bad situation worse.

B. Intervention leaders discuss Distress Tolerance Handout 1: Bad Day Survival Strategies

****Self-Soothe through 5 senses not discussed but included in take home handouts**

a). Briefly discuss and define ACCEPTS and IMPROVE acronyms

b). Pros and Cons of tolerating/not tolerating distress; many people experience tunnel vision when upset helps us see the bigger picture, considering pros and cons helps us delay impulsive actions that may feel good in the moment, but cause long term problems (getting drunk then screaming, hitting, and making a big scene when you see your ex at a party feels good when angry but can feel humiliating later)

C. Acceptance of Current Emotion

-Briefly discuss Emotion Regulation Handout 9: Mindfulness to Current Emotion (as distress tolerance strategy)

EMPHASIZE: Superbowl of Mindfulness Skills

a. (Practice emotional mindfulness early, often, and when your feelings are not too intense)

b. Did you learn to drive a car during rush hour traffic or in empty quiet parking lots?

- Steps for Mindfulness to Emotion

-What acceptance is and isn't

D. Intervention leaders discuss Distress Tolerance Handout 3: "Half Smiling Exercises."

1) **Emphasize:**

Facial expression part of chain of events for Describing Emotions (e.g., Emotion Regulation HO 3)

Bidirectional effects of emotion on facial expressions

Research: facial expressions whether authentic or not leads to actual brain changes.

Practice during many activities including while imaging people that we can't stand or who drive us crazy.

2) Intervention leaders demonstrate half smile (show image of Mona Lisa's half smile);

invite group members to try half smiling

VI. Bring Skills Together (5 minutes)

a. Encourage participants to refer back to intervention handouts and to practice skills; try skills even if they seem silly (don't know if they work for you until you try)

- "Buffet" of Skills

b. Skills become more automatic and powerful with practice (like driving a car with a manual transmission)

c. Like learning anything new, we should expect to fall flat on our faces and learn from mistakes.

1) We are born with emotions but managing our feelings are skills that can be learned like any other skill.
2) We learn from our mistakes
3) Over time confront our strongest emotions, defuse them, and recognize their value.

VII. Wrap Up (15 minutes)

a. Intervention leaders give participants copies of intervention handouts:

Emphasize that binder contains:

-**PRACTICE, PRACTICE, PRACTICE!**

- all handouts discussed

- potentially helpful handouts that were not included in power point presentation

Goals of Mindfulness, Emotion Regulation, Distress Tolerance Modules

Self-soothing through the five sense (Distress Tolerance Handout 1)

Emotion Regulation Handout 6: Reducing Vulnerability to Negative Emotions:

PLEASE MASTER acronym.

Emotion Regulation Handout 9: "Mindfulness of your Current Emotion"

DBT Self-Help.Com: great resource for everyone (not just those with Borderline PD).

VIII. Complete Intervention Satisfaction Questionnaire and Compensation Wrap Up Paperwork

APPENDIX C: SESSION SATISFACTION DATA

Emotion Regulation Skills Training Participant Session satisfaction

Item	Mean (SD)	Minimum	Maximum
1. Program content well organized	4.57 (0.50)	4.0	5.0
2. Facilitators seemed well organized	4.57 (0.54)	3.0	5.0
3. After the program, I feel more confident that I can manage my emotions without drinking.	4.15 (0.61)	3.0	5.0
4. Topics discussed during the program seem relevant to the reasons why I drink alcohol	3.69 (0.99)	1.0	5.0
5. Facilitators seemed warm and caring	4.83 (0.38)	4.0	5.0
6. I will use the skills I learned when I feel the urge to drink to cope with my emotions	4.04 (0.73)	3.0	5.0
7. Facilitators seemed well trained and competent to teach the program skills	4.67 (0.51)	3.0	5.0
8. I would recommend this program to a friend who would like to change his/her drinking	4.30 (0.72)	3.0	5.0
9. I would recommend this program to a friend who would like to learn how to manage his/her emotions better	4.61 (0.63)	2.0	5.0
10. Facilitators presented information in a non-judgmental fashion	4.83 (0.38)	4.0	5.0
11. Facilitators did NOT seem like they judged me based on how much I drink or problems that my drinking has caused me in the past.	4.89 (0.37)	3.0	5.0

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